

LOGY DEPARTMENT

The

# Refrigeration Service Engineer



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NOVEMBER

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Vol. 16

No. 11

# 20 New - CHICAGO VALVE PLATES

- |        |   |        |  |
|--------|---|--------|--|
| Number | Compressor Model  | Number | Compressor Model   |
| • 559  | BRUNNER Single Cylinder                                     | • 576  | O'KEEFE & MERRITT 1 1/4", 1 3/8", 1 1/2", 1 3/4" Medium Twin |
| • 748  | R-2000, R-5000  | • 744  | 1 1/4", 1 3/8", 1 1/2", 1 3/4" Medium Twin                   |
| • 575  | FRIGIDAIRE 4E, 5F, 6G, F4F, FS6                             | • 745  | Cyl.—Methyl Chloride   |
| • 705  | GENERAL ELECTRIC CM3 Series (Hollow Casting) C21A39, C21A43 | • 749  | Cyl.—Sulphur Dioxide   |
| • 747  | JACK & HEINTZ All Open Models                               | • 750  | PAR S-15, S-15NS, S-100, T-100, R-200, S-200                 |
| • 557  | MERCHANT & EVANS 250, 3325, 450 (1936)                      | • 574  | STARR FREEZE Twin Cylinder                                   |
| • 571  | Single Cylinder   | • 740  | SUPERCOLD Model J  |
| • 572  | 140, 180  | • 741  | Model K  |
| • 573  | 625, 725, 1125 (1936)                                       | • 742  | Model L  |
| • 517  | Single Cylinder   | • 743  | Model N  |

## FOR BETTER PERFORMANCE

These 20 New Valve Plates are Designed to Fit 37 Compressor Models. This Greatly Increases the Scope of Your Service on Compressor Repairs.

ASK FOR THEM AT YOUR REFRIGERATION WHOLESALER



REPLACEABLE SEATS ARE EXCLUSIVE WITH CHICAGO VALVE PLATES



### CHICAGO SEAL CO.

332 S. HOYNE AVE.  
CHICAGO 12, ILL.

THE REFRIGERATION SERVICE ENGINEER, Nickerson & Collins Co., Publishers, 433-435 N. Waller Ave., Chicago 44, Ill. Published monthly. Vol. 16, No. 11, November, 1948. Entered as second-class matter March 4, 1938, Chicago, Ill., under the Act of March 3, 1879. Additional entry at Beloit, Wis., April 15, 1948. Copyright 1948. Subscription in the U. S. \$3.00 per year, other countries \$4.00.

*The Ansul Research Staff*

REPORTS ON:

# SLUDGES

Approximately 90% of the sludges produced in refrigerating systems are due to moisture. The exact cause can always be determined by analysis, but the appearance of the sludge (see photos) is usually indicative of the cause.

## SLUDGE DERIVED FROM MOISTURE—

If water is present in a machine, the nature of the sludge depends upon the type of refrigerant and length of time the water is present. All refrigerants ... sulfur dioxide, methyl chloride, Carrene and "Freon-12" ... react with water to produce corrosion products characteristic of each. To prevent sludge, the amount of water present in a refrigerating system must be small enough to avoid ice separation and corrosion. For "Freon-12" and methyl chloride, a quantity of water approximately .05% by weight will cause corrosion; the limit is somewhat higher for sulfur dioxide.

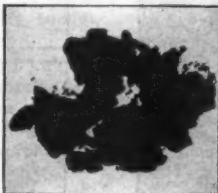


GRANULAR SLUDGE  
... due to moisture

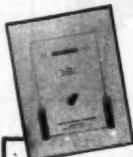


FLUID SLUDGE  
... due to oil

**SLUDGE DERIVED FROM OILS—**Oil sludges are characterized by total or partial solubility in carbon tetrachloride, gasoline and similar solvents. It is generally presumed that oil sludges are due to two causes: (1) an interaction between the unsaturated constituents of the oil and the refrigerant; (2) a breakdown of the oil due to heat, oxidation, friction, etc.



HARD SLUDGE  
... due to moisture and oil



**SEND FOR  
"SLUDGES"**

by Ansul

Research Staff

A detailed analysis of the refrigeration sludge problem.

ANSUL WHOLESALERS are ready and equipped to render an intelligent, co-operative service to refrigeration engineers and maintenance men on problems which arise from time-to-time in the operation of refrigerating systems.

### FOR EXAMPLE:

Samples of ice machine oils, submitted by users of Ansul Refrigerants to Ansul Wholesalers, are tested by Ansul laboratories without charge by the Ansul Standard Wax-Oil Separation Method. This approved method, developed and standardized especially for use in connection with oils used in refrigerating systems, provides an accurate determination of the amount of wax which separates from an oil at low temperatures.

Ansul Refrigerants are available at leading wholesalers everywhere.

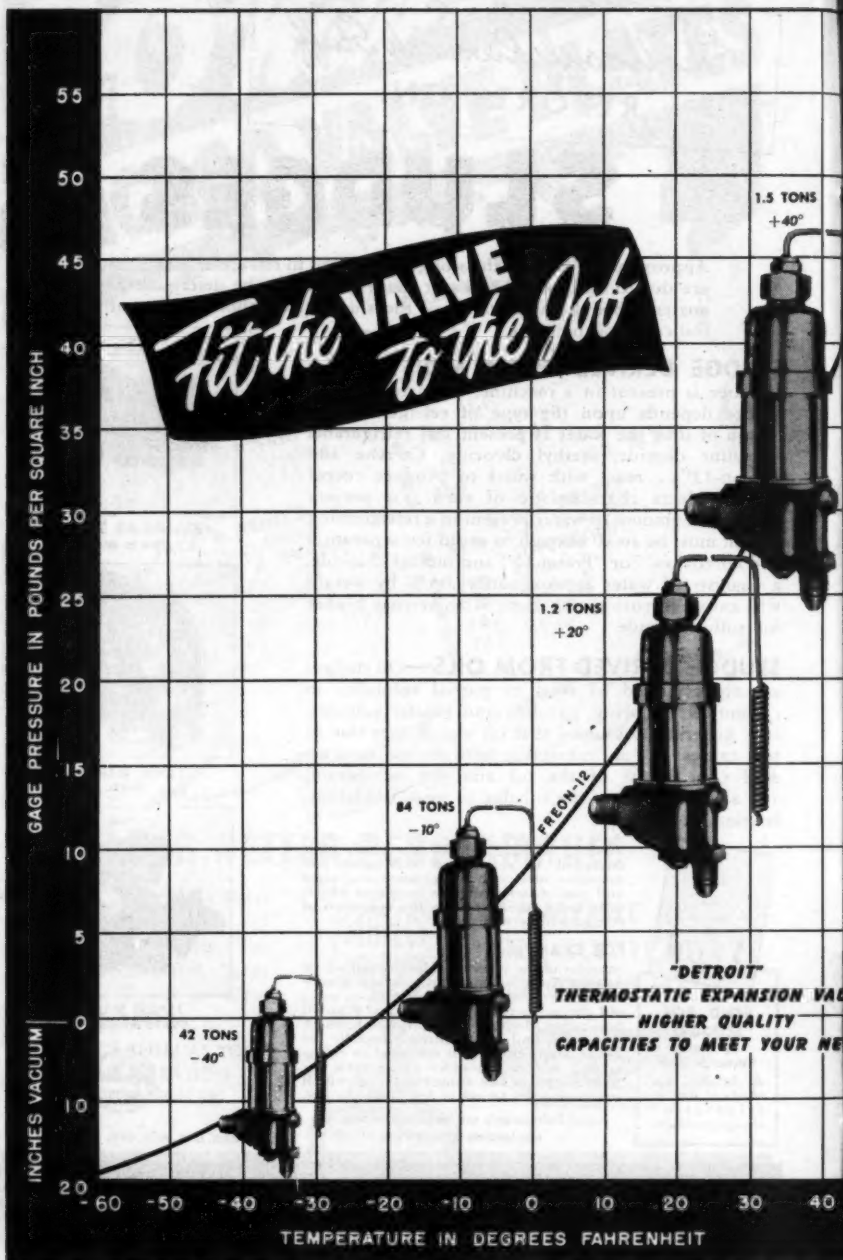


REG. U. S. PAT. OFF.

# ANSUL CHEMICAL COMPANY

REFRIGERATION DIVISION, MARINETTE, WISCONSIN

DISTRIBUTORS FOR KINETIC'S "FREON 11" "FREON 12" "FREON 21" "FREON 22" "FREON 113" AND "FREON 114"





*Fit the VALVE  
to the Job*

1. Capacity depends upon several factors, but largely upon the pressure change developed in the power element by the change in feeler bulb temperature.
2. To flood properly, superheat at the coil outlet should be kept relatively low on all types of installations.
3. Therefore, to insure proper coil outlet superheat, a constant opening superheat is adopted regardless of evaporator temperature. A 3° F. temperature change gives less pressure change and correspondingly less valve opening at lower evaporation temperatures.
4. A constant temperature change, such as 3° F., at the feeler bulb will result in a 3 p.s.i. pressure change at +40° F. evaporation temperature but considerably less than 3 p.s.i. at lower evaporation temperature, such as 1.1 p.s.i. at -20° F. evaporation temperature.
5. Therefore, a valve having 1.5 tons capacity at plus 40° evaporation temperature with a 3° to 4° opening superheat will have a capacity of only .42 tons at minus 40° suction temperature with the same opening superheat.
6. The condensing unit capacity varies in the same manner and in approximately the same ratio as the expansion valve capacity.

**Therefore:—Match the nominal expansion valve capacity with the nominal condensing unit capacity and the job will be right for nearly any suction temperature range.**

*The Same Valve gives you more capacity in tons as evaporator temperature goes up—less capacity as it goes down. Conversely, you need a larger valve to get the same tonnage capacity as evaporator temperature goes down.*

5076

**DETROIT LUBRICATOR COMPANY**



DIVISION OF AMERICAN RADIATOR & Standard Sanitary CORPORATION

**General Offices: 5900 TRUMBULL AVENUE, DETROIT 8, MICHIGAN**

"DETROIT" HEATING AND REFRIGERATION CONTROLS • ENGINE SAFETY CONTROLS  
FLOAT VALVES AND OIL BURNER ACCESSORIES • "DETROIT" EXPANSION VALVES  
AND REFRIGERATION ACCESSORIES • STATIONARY AND LOCOMOTIVE LUBRICATORS

Canadian Representatives—RAILWAY AND ENGINEERING SPECIALTIES LIMITED, MONTREAL, TORONTO, WINNIPEG

SERVICE ENGINEER

3

November, 1948

*"I'm being bored  
but you'll be interested"*



## ... in these **NEW** **General Electric Condensing Units**

MASS PRODUCED by modern precision methods, the new General Electric Type CW condensing units have the built-in quality to carry on the General Electric tradition for dependability and economy in operation. The new design and new production methods make it possible for General Electric to offer a host of quality features—many of them never before found in small fractional horsepower units.

This line sounds a new note in the commercial refrigeration field. Smartly coordinated in design, it covers the range of from 1/6 hp to 2 hp with 8 air cooled models and includes 4 water cooled units—using only three basic compressors. *General Electric Company, Air Conditioning Department, Section 81211, Bloomfield, New Jersey.*

**GENERAL  ELECTRIC**  
**Refrigeration Equipment**

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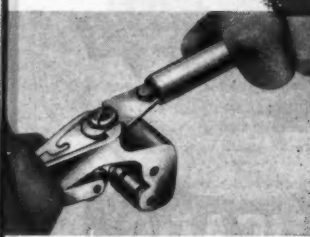
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# New **IMPERIAL** *Hi-Duty* **TUBE CUTTER**

**Free Wheeling Ball Bearing  
Action Makes Tube Cutting  
Easier and Faster**



Showing retractable reamer  
in operating position.



Illustration (actual  
size) shows tube  
cutter being used to  
remove a flare from  
a piece of tubing.

Never before has there been a tube cutter that makes it so easy to cut tubing quickly, accurately, squarely. Outstanding advantages, illustrated at right, truly make this the finest tube cutter!

Cuts copper, brass, aluminum, Bundy steel, block tin and lead tubing, hard or soft temper. Has broad range—cuts tubing  $\frac{1}{8}$ " to 1" O.D. inclusive.

Extremely compact—overall length, only  $4\frac{1}{2}$ ". High strength, lightweight aluminum alloy body. Makes quick, clean, right angle cuts. Leaves no burrs or chips.

Here is a tool you'll be proud of. It is built to the quality standards which for years have made Imperial Tube Cutters the overwhelming favorites. Ask your jobber for it . . . and others in the complete Imperial Tubing Tool Line. Ask for Folder 347.

No. 274-F Hi-Duty Tube Cutter for  $\frac{1}{8}$ " to 1" O.D. tubing, inclusive. Net wt. approx. 6 oz. Price each...**\$3.30**

**THE IMPERIAL BRASS MFG. CO.**

534 S. Racine Ave., Chicago 7, Ill.

# IMPERIAL

*See  
Your  
Jobber*

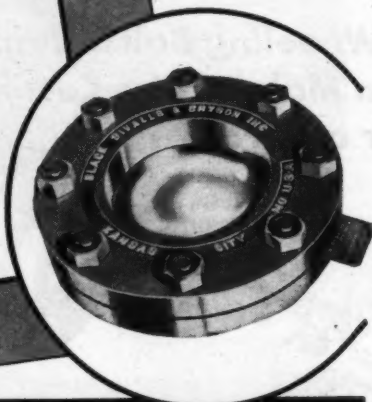
FITTINGS • VALVES • FILTERS • DRIERS • FLOATS • CHARGING LINES  
TOOLS FOR CUTTING, FLARING, BENDING, COILING, PINCH-OFF AND SWEDGING.



# PREVENT OVER-PRESSURE TROUBLE

*in your  
refrigeration  
units*

*with*



## BS&B SAFETY HEADS

Protect receivers and copper tubing from rupture. Save compressors from destructive over-pressure. SAFETY HEADS offer that positive margin of safety that prevents such accidents. Eliminate costly equipment losses . . . save on costly shut-downs. The simple rupture disc of the SAFETY HEAD absorbs the shock of over-pressure . . . bursts in tension at pre-set pressure.

SAFETY HEADS provide a full-throated, pipe-sized escape point. Fractured discs are easily, quickly replaced. Tamper-proof, fool proof SAFETY HEADS offer you guaranteed performance. A wide selection of types assures you of tailor-made protection. Write today for complete details. Address Special Products Division, Black, Sivalls & Bryson, Inc., Power and Light Building, Kansas City 6, Mo.



FOREIGN INQUIRIES INVITED

Cable Address: BLACK, KANSAS CITY, U.S.A.

### BLACK, SIVALLS & BRYSON, INC.

KANSAS CITY, MO.

OKLAHOMA CITY, OKLA.

**QUICK RESPONSE**.....

the  
precision-throttling  
action

of  
**ALCO  
THERMO VALVES**



Alert Alco Thermo Valves get better results from refrigeration systems by controlling the refrigerant flow more accurately and dependably. Reasons:

- ▶ Minimum moving parts mean less friction and wear, quicker response to slight changes in superheat
- ▶ Cupped diaphragm has no welds in flexing area — prevents loss of thermal charge
- ▶ Rugged, corrosion-proof internal parts, precision-built for easy interchangeability

Capacities:  $\frac{1}{4}$  to 50 tons, "Freon-12";  
 $\frac{1}{2}$  to 100 tons, methyl chloride. Choice of  
2 to 36 outlets in multi-outlet models.

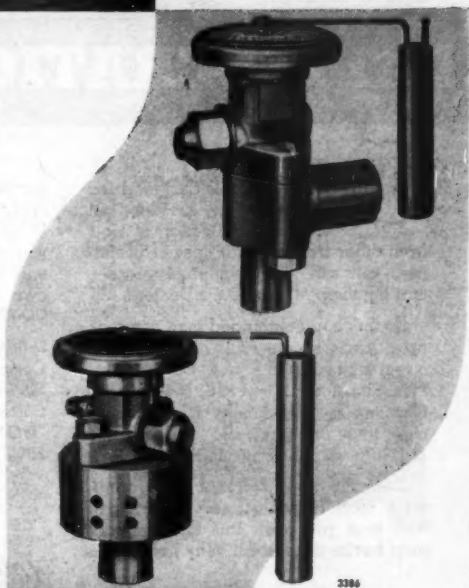
Available from your nearest Alco  
wholesaler. Ask for Bulletins 171 (single  
outlet) and 180 (multi-outlet).



Designers and Manufacturers  
of Thermostatic Expansion  
Valves; Evaporator Pressure  
Regulators; Solenoid Valves;  
Float Valves; Float Switches.

**ALCO VALVE CO.**

857 KINGSLAND AVE. • ST. LOUIS 5, MO.



# DURO-CHROME

Means  
"Doggone  
Good"



## REFRIGERATION TOOLS!



Here are tools designed for **refrigeration service**, not merely a collection of tools from other trades. Their special usefulness will win you the minute you see and try them at your Duro Dealer's.

No mechanical-minded man can pick up a Duro-Chrome Tool without getting a real kick out of it's sweet balance and feel. That feel is a part of every Duro-Chrome Tool; it comes from making more than a billion tools to turn a man's skill into work he's proud of.

Even the sleek **Look** of these handsome tools helps sell service; anyone who sees you open this chest cannot help but be impressed! Why not make a

partner of Duro-Chrome and turn your skill to fullest advantage? Your Duro Dealer will be proud and happy to show you this and other Duro-Chrome sets and related tools—each one a joy to own and use **DURO METAL PRODUCTS, CO., 2649 N. Kildare Ave., Chicago 39, Ill.**

**57-PIECE DURO-CHROME REFRIGERATION SET** (Illustrated) Complete assortment for quick, efficient service work. Each tool has typical Duro-Chrome finish and balance; all sockets "HOT-BROACHED" for accuracy and 25% greater strength.

*doggone good tools*

## DURO-CHROME TOOLS

You Ought to Have THE BIG DURO CATALOG  
**FREE!**





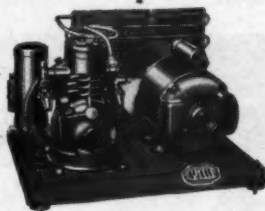


# PAR 17

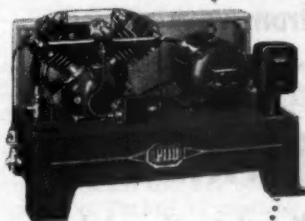
*The popular*

... 17 popular models ranging from small, compact 1/6 h.p. units for domestic and commercial self-contained applications ...

The wide range of models and sizes of Par Condensing Units affords a proper type, proper size unit to permit "tailored installations" for maximum economy and maximum efficiency on each individual application. See your Par Wholesaler for a complete list of Par Units now available or write for illustrated Catalog R-99 for specifications and capacities.



*to rugged, heavy duty 5 h.p. water-cooled units for commercial applications.*



Par-Condensing Unit Line sold exclusively through Franchised Refrigeration Equipment Wholesalers

*By Comparison — You'll Buy PAR*

**LYNCH CORPORATION**

*Par Compressor Division*

TOLEDO 1, OHIO U.S.A.

# **CROSLEY**

*Twice Tested*

## **REFRIGERATION PARTS**

**for general replacement**



**\* IMMEDIATE  
DELIVERY**  
from your nearest  
**CROSLEY  
DISTRIBUTOR**  
listed to the right

\*Indicates distributors equipped to furnish complete repair service on Crosley Hermetically Sealed Refrigeration Systems.

Write your distributor for free Crosley Service Parts Catalog.

Albany, New York . . . . . Roskin Bros.  
\*Amarillo, Texas

Domestic Appliance Dist.

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\*Birmingham, Ala. Alabama Service Co.  
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Ft. Wayne, Indiana . . R. M. Kaough Co.  
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\*Jackson, Miss. . . . Southern Wholesalers  
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\*Kansas City, Mo. . . . Superior Distr. Co.  
\*Little Rock, Ark. . . . Wright Service Co.  
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- \*New Orleans, La.

Woodward, Wight & Co.

- \*New York, N. Y. . . . Crosley Distr. Corp.
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- Orlando, Fla. . . . Graybar Elec. Co., Inc.
- \*Peoria, Illinois . . . Johnston-Moody Co.
- \*Philadelphia, Pa. . . . Judson C. Burns, Inc.
- \*Phoenix, Arizona . Appliance Distributors
- \*Pittsburgh, Pa. . Pittsburgh Products Co.
- Portland, Maine . Graybar Elec. Co., Inc.
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- Providence, R. I. . Graybar Elec. Co., Inc.
- Quincy, Illinois . . . Tenk Hardware Co.
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- Savannah, Georgia . . . Frank Corp.
- \*Seattle, Wash. . Commercial Appliance Co.
- Shreveport, La. . . . Electric Supply Co.
- \*Sioux Falls, S. D. . . . Power City Radio
- South Bend, Ind. . . The Ridge Company
- \*Spokane, Wash. . . . Kelly Johns Inc.
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- Watertown, S. D. . . . Lyle Meyers
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- \*Youngstown, Ohio. . . Dorrance Supply



LOOK FOR this emblem on the outside of every package of refrigeration parts you buy. It's your guarantee of quality parts inside.

**YOUR CUSTOMERS WILL BUY BEAUTY**

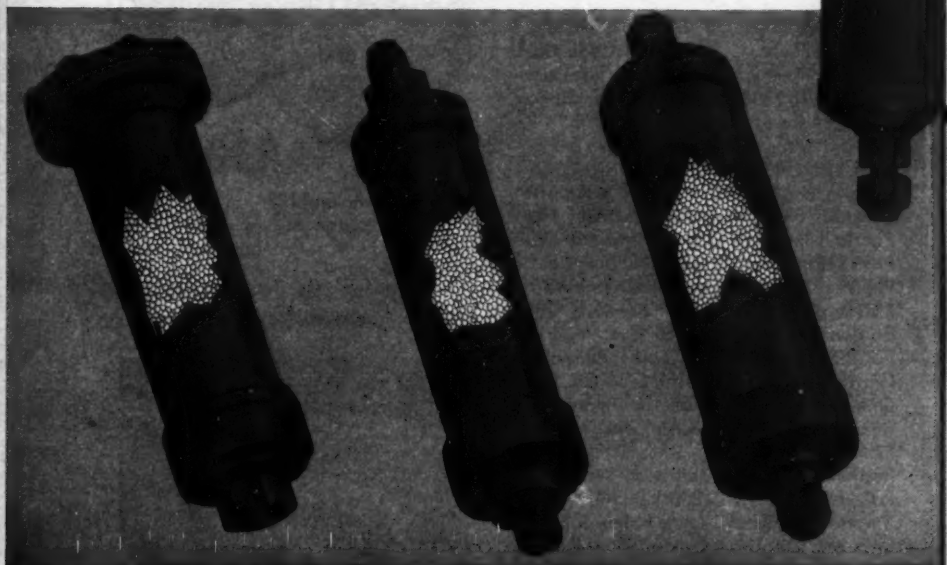


... and here it is by the can! Crosley wax polish keeps refrigerators gleaming—ranges glamorous—radios glossy. Works fine, too, on cars, windows, and for general household use. Safe, economical, easy to use. Cleans and wax polishes in one operation. Packed 12 pints to the case. Your cost, \$.45 pint. Suggested list, \$.75 pint. Order a case now from your nearest Crosley distributor.

# CROSLEY

Division—**AVCO** Manufacturing Corporation  
Cincinnati 25, Ohio

# Specify S/V Sovabead for your Dehydrators



## New Type Silica Gel Desiccant in Bead Form Offers Many Advantages

- You can be sure of maximum moisture adsorption when you get S/V Sovabead in your dehydrators.

Controlled laboratory tests show that these new beads, developed by Socony-Vacuum, are capable of reducing the moisture content of Freon 12 Refrigerant to as low as .0002 of one percent.

What's more, the uniform beads offer less resistance to the flow of liquid and gaseous refrigerants than other desiccants. You get less dusting and attrition loss.

So make certain of a superior desiccant next time you order dehydrators. Specify this new

bead type desiccant from your supplier.

This table shows maximum drying effects of desiccants obtained in tests conducted by an independent laboratory. Standard dehydrators containing the activated desiccant were flooded with wet refrigerants and analyses were made after at hourly intervals.

REFRIGERANT	DESICCANT	INITIAL MOISTURE	AFTER 1 HOUR	AFTER 2 HOURS	AFTER 3 HOURS
"Freon 12"	S/V Sovabead	0.0060	0.0008	0.0006	0.0002
"Freon 12"	Silica Gel	0.0060	0.0008	0.0006	0.0002
Methyl Chloride	S/V Sovabead	0.0160	0.0029	0.0025	0.0020
Methyl Chloride	Silica Gel	0.0160	0.0029	0.0025	0.0020

## Socony-Vacuum Process Products

SOCONY-VACUUM OIL COMPANY, INC., 26 Broadway, New York 4, New York,  
and Affiliates: MAGNOLIA PETROLEUM COMPANY, GENERAL PETROLEUM CORPORATION





*Take My  
Tip...*  
**SPEED REPAIRS  
AND REDUCE COSTS**

## OIL RING PULLER



No P-1  
PAT PEND

**\$750**  
complete

**A** WATSCO REFRIGERATION tool designed to remove the stubbornest oil ring from the motor shaft. Just place tool over that tough oil ring; adjust the jaws to the nearest slot, then a few smooth, easy turns of the handle . . . and the ring is off! The same simple method may be used to remove the seal ring that is often frozen on the shaft of the Norge Rollator. **A LIFETIME TOOL for DELCO MOTORS AND NORGE ROLLATORS.**

**FEATURES:** Finest Tool Steel—Cadmium Plated—Precision Made—Hardened Ball Tip.



Pat. 2,451,701



Pat. pend.



Pat. Pend.



Pat. Pend.

**OUTSIDE REPLACEMENT TERMINALS for Sealed Units—** Stop leaks! Repair sealed units easily, quickly. You don't have to remove unit. WATSCO Terminal screws right over the original terminal post . . . **SEALS THE LEAK INSTANTLY.** Replacement terminals for over 15 different sealed units. Send for literature.

Per set 3 terminals ..... **\$5.50**

**INTERNAL CHECK VALVE for Sealed Coldspot Units—** the newest addition eliminates hours of costly labor in lapping and resurfacing old seat. This new WATSCO self contained cartridge type valve is easily and quickly installed.

**\$1.95**

**COLDSPOT-BOHN CHECK VALVE—**A WATSCO cartridge type, completely self contained check valve. Easily installed in a few minutes with our installation tool or a standard 5/16" threaded bolt.

**\$1.95**

**LINE CHECK VALVE—**Designed for sealed unit installations but can be used on any type machine up to 1/4 HP. May be installed in any position, **POSITIVE SPRING ACTION.** Supplied with solder fittings. Sizes 1/4" - 5/16" - 3/8".

**\$2.45**

REPAIRMEN RUN INTO FEWER BOTTLENECKS USING WATSCO PRODUCTS. ALL WATSCO PRODUCTS HAVE BEEN THOROUGHLY TESTED AND THEIR MERITS PROVEN BEFORE LEAVING THE FACTORY.

**SOLD BY LEADING WHOLESALERS**

**Wagner Tool & Supply Corp.,**

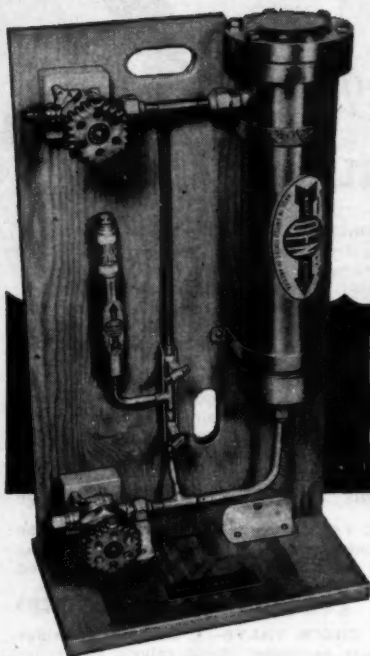
**13-04-43 Ave., L. I. C., N. Y.**



Free  
Descriptive Circular



# REVOLUTIONARY DRYING METHOD!



*Provides positive,  
"one-shot" cure  
for  
moisture troubles*

## DFN MOISTURE CONTROL UNIT

*Read these advantages!*

### ● FASTER DRYING!

Gets wettest systems operating normally in 15-30 minutes. Prevents deposit of ice in expansion valve or evaporator.

### COMPLETE DRYING!

—down to  $-60^{\circ}$  dew point by running 4 minutes per pound of refrigerant.

### VISUAL DRYING!

Moisture Indicator tells when system is wet or dry—tells when drier needs replacement. No guessing.

### LOW COST DRYING!

One cartridge has the capacity to pick up and hold over 18 teaspoonfuls of water. It's portable—serves many jobs in field, shop or factory. Cartridge is 100% effective until exhausted; easily replaced. Saves time, eliminates call-backs.

### SIMPLIFIED DRYING!

Easy installation in liquid line because Unit, with special dessicant, operates at refrigerant temperatures up to  $150^{\circ}$  F. No complicated hook-ups, no working in confined spaces.

●  
See the DFN Moisture Control Unit at your wholesaler. Write us for detailed literature.

## McIntire Connector Company

255 Jefferson St.

Newark 5, N. J.





## Yes, Yes, a thousand times... **"YES"**

Want to save time, trouble, and profiting call-backs on your refrigeration control replacements? Then make the Cutler-Hammer refrigeration control catalog your standard guide on replacements. Here you will find "specific-fit" units which are not merely listed but already manufactured by Cutler-Hammer for more than 1,000 individual refrigerator models which the industry has produced since 1925. No "modifying", no fussing, no compromises, when you put in C-H "specific-fit" replacement control units. And you'll also quickly see how the widely-known Cutler-Hammer name

(advertised in The Saturday Evening Post, Time, Newsweek, American Home, Better Homes & Gardens, House & Garden, etc.) builds customer confidence and good will. The C-H refrigeration control catalog, as well as the items you need, are available through your authorized C-H refrigeration wholesaler. Do not forget, this C-H refrigeration control line includes the outstanding *general purpose* replacement control (9521N9) for use with motors having "built-in" overload protection. CUTLER-HAMMER, Inc., 1363 St. Paul Avenue, Milwaukee 1, Wisconsin.

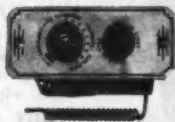
Here are typical examples from the broad line of C-H "specific-fit" refrigerator replacement controls.



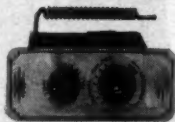
9502N388 C-H "specific-fit" for Norge 1932-33-34 models



9521N64 C-H "specific-fit" for Norge 1938 models



9502N373 C-H "specific-fit" for Cold Spot 1932-33-34-35-36 models



9502N95 C-H "specific-fit" for Hostess 1933-34-35-36-37-38 models

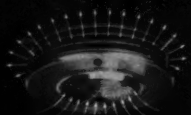


9521N69 C-H "specific-fit" for Philco 1941 models



Featured by Cutler-Hammer refrigeration wholesalers and recommended by alert service dealers from coast to coast.

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Upper illustration: Standard Dome Cooler with air emitting in all directions.



Lower illustration: Two-way Dome Cooler with air flow limited to two directions.

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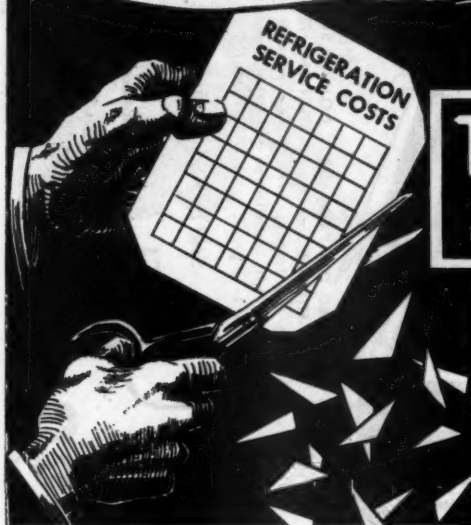


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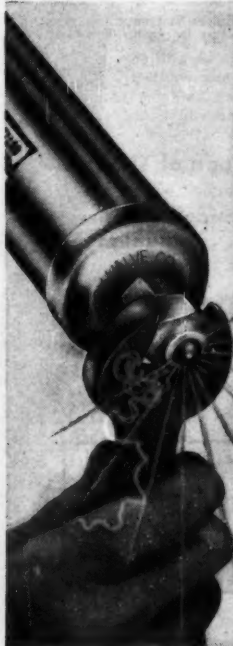
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November, 1948

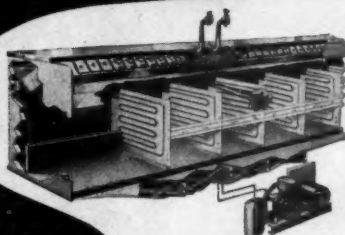
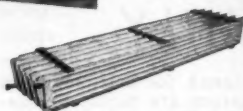
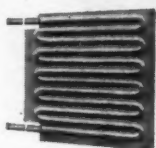
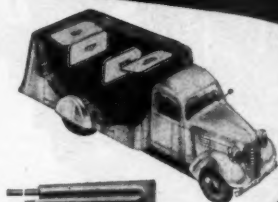
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THE REFRIGERATION

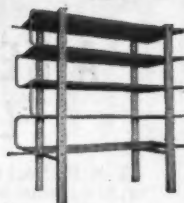
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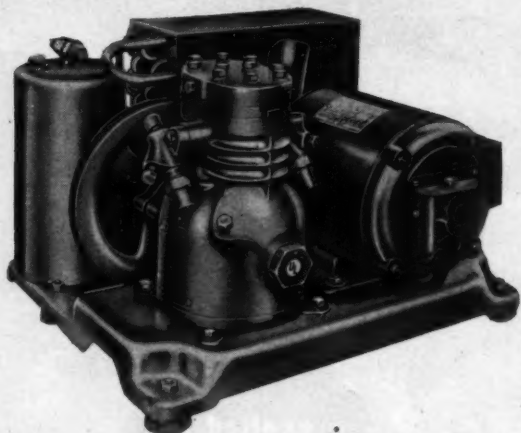
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- ★ STANDARD DUTY AIR COOLED,  $\frac{1}{3}$  H.P.,  $\frac{1}{2}$  H.P.,  $\frac{3}{4}$  H.P.
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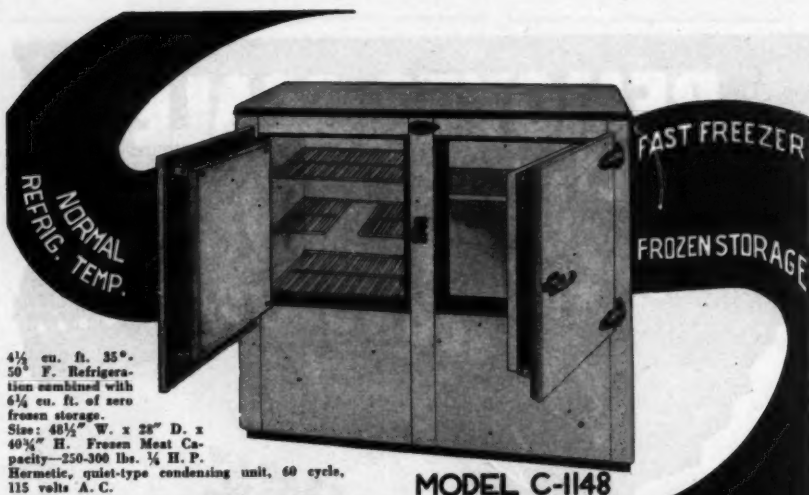
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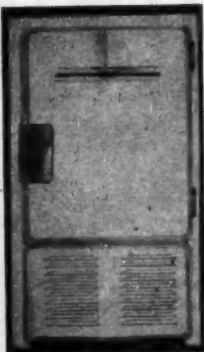
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 Size: 48½" W. x 28" D. x 40½" H. Frozen Meat Capacity—250-300 lbs. ¼ H. P. Hermetic, quiet-type condensing unit, 60 cycle, 115 volts A. C.

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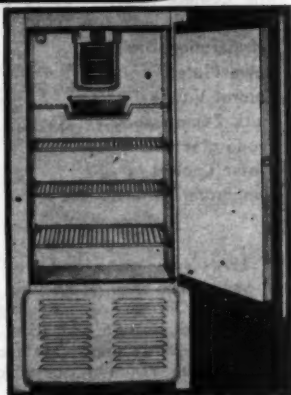
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Methyl Chloride

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*THEY'RE*

**consistently pure  
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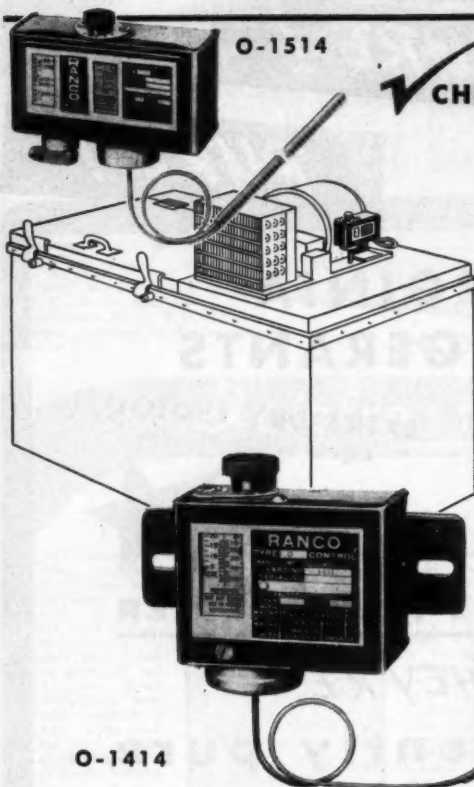
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"Freon" drums being loaded on multi-unit car on siding at new plant.



Tons of "FREON"

## New Kinetic Plant steps up Production

**TODAY** there is no shortage of "Freon." Actual production obtained shows that the new "Freon" plant at East Chicago, Indiana, will increase the supply by approximately sixty per cent. No reason—now—for individual stock-piling. No reason for not returning "Freon" cylinders promptly. Empty cylinders will always be needed to help ship that production and meet current demands for "Freon" now available.

Shipments continue at peak levels. That is because manufacturers of air conditioning and refrigerating units, as well as insecticidal aerosols, are using more "Freon" than ever before. They recognize that "Freon" refrigerants and propellants are safe . . . nontoxic, nonflammable, and nonexplosive . . . ideal for every type of commercial, industrial or household requirement.

The quality and uniform purity of these refrigerants (they are also practically an-

hydrous: less than 10 parts of moisture per million parts of "Freon") contribute to the satisfactory performance and the long life of modern, compact, space-saving refrigeration machines.

Smart purchasers today check carefully to determine whether the equipment they are buying is designed to utilize "Freon" safe refrigerants. It is a good way to safeguard their investments. Kinetic Chemicals, Inc., 10th and Market Streets., Wilmington 98, Delaware.



# ◀ IN THIS



# ISSUE ▶

**T**HERE has always been a tendency to undersize drier units installed permanently in refrigerating machines, perhaps because it is usually assumed that the system is drier than it actually is. It is difficult to determine how wet or how dry a system is without tests, but to be on the safe side, the drier should be big. In his article "How Large a Drier is Needed in a Refrigerating System?" J. C. Gray provides a graphic illustration of the proper balance between drier agent and refrigerant.

**"ROUND the Clock Service Brings Results"** says one service company who has made a success of this policy. Our Front Cover this month shows two views of this company's facilities and the story on page 33 describes their operation.

**A** NEW idea in method of constructing two story cold storage rooms reduces the amount of equipment and conserves refrigeration according to an item on page 35.

**DID** you know that you can contaminate a Freon system if you silver solder joints while Freon is present in the system? You can—according to the answer in Questions and Answers, page 53.

**T**HE second in the series on "Electricity as Applied to Refrigeration" by Edward Dowis appears on page 45. Getting into the meat of the subject this month, he explains the internal circuits of several types of motors.

**BRAZING** with silver alloys requires a technique that is a must with service engineers today. It is not hard to develop but of course there is a right and wrong way. The article on page 40 by A. F. Swift and J. C. Powers illustrates how it is done on fittings.

**T**HE Kroger Food Foundation and Frigidaire have made a number of tests on vegetable coolers to determine the best method of cooling for most economical operation with the least shrinkage and spoilage. They have come up with some interesting figures and recommendations which are included in the story on page 54.

**W. L. COTTON**, in his series of articles "This Business of Service," provides a verbal picture this month of how patching can have far reaching bad results and how the service company, the owner of the equipment and perhaps even the community as a whole, can be saved from losses by doing a thorough job.

## COVER

**O**UR front cover this month shows two views of a modern, well equipped service shop which is a part of the facilities of the Refrigeration Sales & Service Co., Inc., of Oklahoma City, Okla.

The upper photo shows the electric control repair department and the lower photo, the electric motor repair department. A story of the company's operation appears on another page of this issue.

# How J & H helps you sell

**EXTRA CAPACITY...**  
Large seamless steel receiver has abundant capacity for refrigerant.

**IMPROVED PERFORMANCE...** Scientifically designed steel valve plates have shallow valve ports.

**LESS ATTENTION...** Positive sealing of refrigerant is assured by bellows-type shaft seal. Replaceable parts readily accessible.

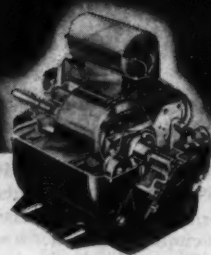
**HIGHER EFFICIENCY...** Less friction throughout compressor because of super-fine surfaces and precision fits.

**STRENGTH TO SPARE...** Rugged, one-piece, forged alloy-steel crankshaft. No inserts, set screws or assemblies to work loose.

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**UNDIVIDED RESPONSIBILITY...** Entire unit, including J & H capacitor start motor, is warranted by Jack & Heintz.



*On-the-job* results show that J & H Condensing Units give the kind of performance that refrigeration equipment manufacturers and dealers can point to with pride. Link-up with these smooth-running, efficient units to enhance your reputation and help boost your sales. Write for full information on 1/4, 1/2 and 1/2 hp J & H Units . . . Also investigate the profit-making opportunities of J & H Electric Motors.

Better condensing units  
and electric motors  
through

**JACK & HEINTZ**  
Mass Precision

**JACK & HEINTZ J & H PRECISION INDUSTRIES, INC., Cleveland 1, Ohio**

# How large a drier is needed in a refrigerating system?

By J. E. GRAY\*

THERE is no one answer to this question that will cover all conditions. It all depends upon how much moisture is present and how dry the system must be.

Any system erected in the field will contain some moisture when the installation is first completed. The quantity of moisture present depends on the dryness of the various parts of the equipment, the atmospheric conditions at the time the installation is made and the care taken by the installation engineer.

It is even possible for very small quantities of moisture to be present in factory dried equipment. Nearly all materials have the facility to absorb moisture. It is true that the quantity is very small for most materials but if very small quantities are present in several locations and then in time a number of these small quantities are liberated into a refrigeration system, trouble will follow.

Therefore, means must be provided to dry the system initially and also to adsorb any moisture that finds its way into the system as time goes on.

It is well known that the amount of water held in solution in refrigerants varies with the temperature. Curves showing the exact quantities for several refrigerants are published. Therefore, with the condensing and evaporating temperatures known, it is easy to determine the degree of dryness needed for any specific installation.

The performance characteristics of several popular drying agents are also well known. Even though data is available, the actual behavior of a dessicant in a refrigerant stream is not too generally understood.

Since the characteristics of both Freon 12 and Silica Gel have been published in several papers, these products will be used for the purpose of this discussion.

The moisture adsorbing capacity of

Silica Gel depends upon its initial condition, its temperature and the amount of water in solution in the refrigerant. Assuming that the Gel is fully activated and that its temperature remains constant, its capacity is then dependent entirely upon the degree of dryness of the refrigerant with which it is in contact. The amount of water in the refrigerant cannot be determined in the field.

The degree of dryness needed to eliminate any operating troubles due to moisture, depends upon the condensing and evaporating temperatures. These conditions are known to the installation engineer. In the following example, it is assumed that the maximum allowable moisture content of the Freon 12 is .002%.

## Attaining Equilibrium

When Silica Gel is introduced into the Freon 12 stream, the two materials seek an equilibrium with respect to moisture. This can best be illustrated diagrammatically.

Consider a beam supported by a fulcrum in the center. Freon 12 and water placed as indicated in Fig. 1 result in an unbalanced condition, tilting the beam.

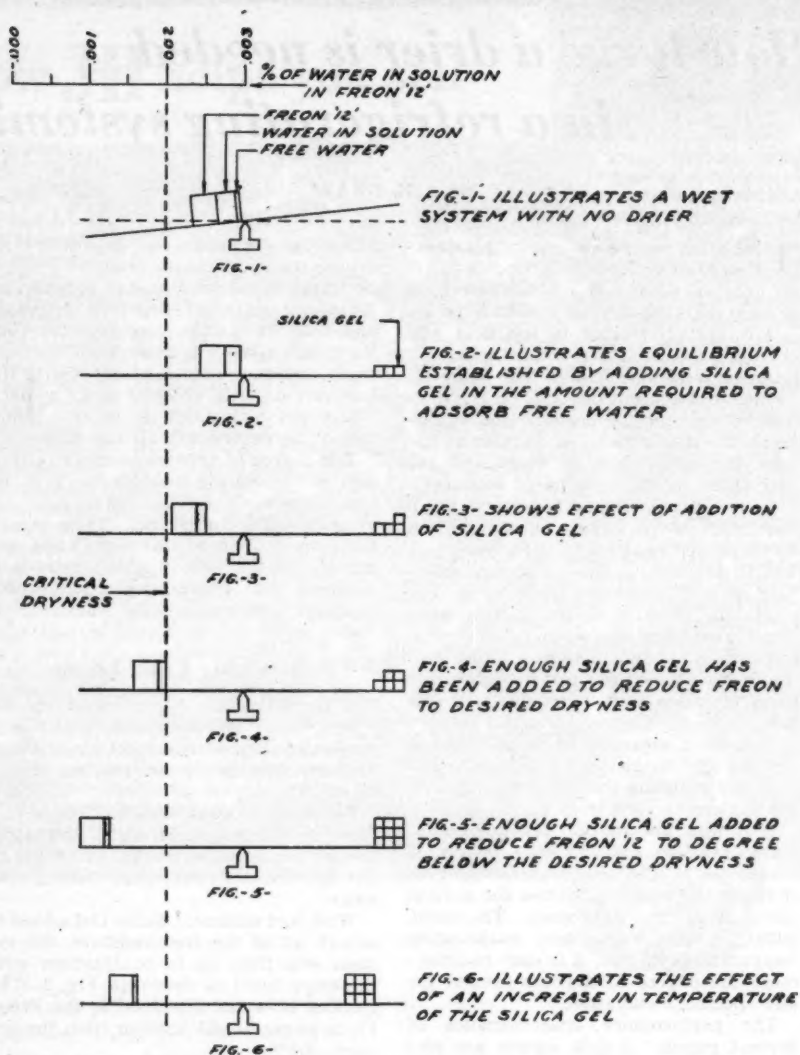
With just sufficient Silica Gel added to adsorb all of the free moisture, the system will then be in equilibrium with the beam level as shown in Fig. 2. The amount of water dissolved in the Freon 12, however, is still greater than the desired .002%.

Fig. 3 illustrates the addition of Silica Gel. Some of the moisture is adsorbed from the Freon 12 solution but the moisture content is still too high for satisfactory operation.

By adding additional Gel, the moisture content of the Freon 12 in Fig. 4 is brought to the desired degree. The system will now operate satisfactorily provided no additional moisture creeps in. If, however, additional moisture is

\*Development Engineer, Mueller Brass Co., Port Huron, Michigan.





added, the Freon-water symbol will move to the right, bringing the water concentration above the desired point. This frequently happens in actual installations.

Fig. 5 illustrates the desirable condition. A drier of sufficient capacity is installed so that the percent of moisture remaining in the Freon is considerably below the danger point. The Silica Gel,

therefore, still has the capacity to adsorb additional moisture and while in so doing, the Freon symbol moves to the right, it can move up to the critical line before any trouble will occur.

Now let us explore the effect of temperature on Silica Gel. The adsorbing capacity of this material decreases as temperature increases. Therefore, if the temperature rises under conditions illus-



trated in Fig. 4, the effect is the movement of Silica Gel to the left and since equilibrium conditions will still prevail the Freon symbol must move to the right to balance the beam. This brings its water content above the critical point.

With an adequate amount of dessicant as illustrated in Fig. 5, there is sufficient leeway to compensate for this condition. Increasing the temperature of the Silica Gel in Fig. 5 results in a condition as illustrated in Fig. 6.

### Install a Large Drier

Adequate drying can be accomplished by installing a sufficiently large drier when the system is first placed into operation.

It may also be accomplished by first installing a temporary drier and later removing this device and installing a permanent drier. **In either case, the total amount of dessicant needed is the same.** The relative costs of the two methods can be determined by the contractor.

The remark has often been made, "I installed a 'Doe' drier, but it did not do the job so I removed it and installed a 'Roe' unit. Since that time, I have had no trouble."

In all likelihood, the trouble was not due to the particular make initial drier. The trouble was due to the system containing more moisture than the original drier could adsorb. If a second drier of the same make had been installed, the same good results would have been obtained.

### Procedure

For a system free from moisture troubles, first make sure that the evaporators, lines and accessories are as dry as possible when installed. Then thoroughly evacuate the system. After the system has been under a vacuum for a reasonable length of time, it has been found good practice to purge with refrigerant and again evacuate.

Install a drier with ample capacity to adsorb any moisture that may remain in the system. Specific recommendations as to size of driers made by accessory manufacturers can only be considered as a very rough guide as no one rule can be applied to all cases. Experience on the part of the installation engineer is a much better teacher.

## Round the Clock Service Brings Results

By Ernest W. Fair

**"NINETY-NINE** per cent of our business comes from promotion of new business through our telephone directory advertising and the use of 24 hour service through listings with the local physicians and surgeons exchange," declares H. W. Royston, one of the three partners of the Refrigeration Sales and Engineering Company, Inc., 311 Northwest 6th, Oklahoma City.

"Our gross business is up 25 per cent over last year," he continues, "we've used this basic business getting idea since our first year, 1932, when our gross was about \$36,000. In 1947 it had climbed to \$193,000 and this year we expect to do \$250,000 a year, so I believe you can call this a doggone good business building idea."

L. W. Scott and Percy Pugh are Royston's partners. The business today has a \$6,000 per month payroll and handles between 8,000 and 9,000 service calls a year. Sixty per cent of the firm's gross business is in its service department.

"This 24 hour service call feature of our business is a sure fire idea for any refrigeration service firm which will back it up with the best possible service and guarantee its work," Royston declares. "Our listing with the physicians and surgeons costs us only \$15 per month and that includes service and telephone. During the summer we will average eight to ten calls per night. We use the idea strictly on customer service."

When service calls come in to the shop they are written up on a call sheet or the man calls in from the job if it has been a call unable to identify through the customer's telephone conversation.

"When a customer wants service he is often in a position where he cannot wait for his turn in the morning," Royston comments, "and that means that the

man who can give him instant service at any hour of the day or night is the one who is going to get all of his business.

"If you follow our plan and advertise in the telephone book, which is the first place a prospect is going to look for someone to handle his trouble, a 24-hour service, you are going to get the business over the firm which stays open from eight to five."

He hastens to point out that there can be no quibbling when it comes to maximum efficiency and quality in service work but that standards must be kept high.



Left to right are: H. W. Royston, Secretary-Treasurer, Percy "Bud" Pugh, President, and L. W. Scott, Vice-President of the Refrigeration Sales & Engineering Co. These three men are co-owners of the company. They are pictured in front of their place of business.

"There must be no complaints and every customer must be satisfied if you are going to build an institution in this business," Royston states, and knows whereof he speaks, for the ideas of these three men have built a \$6,000 borrowed investment into a \$55,000 business owning its own building and with no indebtedness.

Even though this firm puts great emphasis on service business, it is not neglecting its sales possibilities on new equipment.

"The future of the refrigeration market is excellent," he states, "for the replacement market is absolutely unlimited. I know of no other business in

which there is so great possibilities for new equipment sales and replacement sales.

"Wild cat manufacturers are ruining the market by putting out inferior merchandise and by not having warranty guarantees and, believe me, our service department knows the full story on this.

"All of this wild cat merchandise is going to have to be replaced very soon and that is where the firm handling recognized products of established standards is going to have all that it can handle. A lot of this wild cat merchandise was bought because the customer could get nothing else or because of price appeal. That customer has learned his lesson well by this time and he is going to be in the market for reputable merchandise only in the future.

"The refrigeration merchandiser who doesn't buy and sell only top quality merchandise in the future is not going to be able to survive the future."

This firm has considerable plans for expansion of its sales and services departments in the near future but Royston believes caution should be followed in such efforts during the months ahead. He believes that the biggest job ahead will be further cementing of good relationships with customers in order to have a firm foothold on the competitive market which he sees in the immediate future.

"Our chief expansion," he says, "will be mostly along the lines of additional financing to handle large contract air conditioning which we believe is a market well worth going after. Our service department is the largest in our state and we believe that it is in good shape to handle all of the business we can obtain for some time to come."

The service shop today handles about 200 average jobs per month but could handle more. A glance at illustrations on the front cover of this issue will show the extent of its operation and the efficient manner in which it is equipped and laid out. Electric motor repair work as well as wholesale and retail sales are also handled by the shop.

All service men of this firm are salesmen and they are paid on a five per cent commission basis on parts and products.

"Your best salesman is your service man on a call," Royston says. "The man

in coveralls can sell more refrigeration equipment and merchandise, particularly in the commercial field, than any man in a business suit.

"Another thing we have found out is that it doesn't pay to work these men

on a clock basis but on a completed job basis with hourly rates and allowances for autos. The application of incentives of every kind is the best thing you can give your men to sell more and sell harder all the time."

## Construction Techniques Reduce Refrigeration

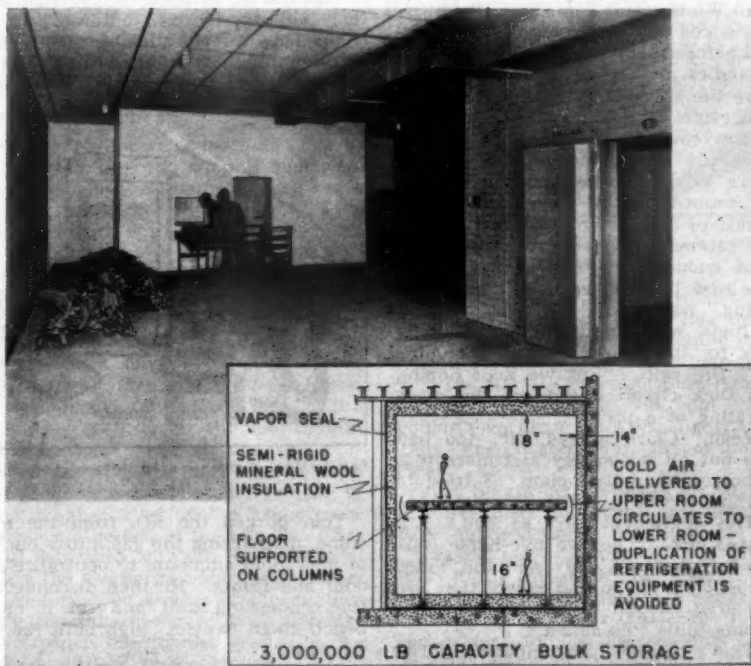
**B**OTH initial and operating costs of refrigerating equipment have been minimized at the new 3,000,000 lb. Susquehanna Locker Plant, Sunbury, Pa., by: (1) providing an air space between the edges of the dividing floor and the walls of two bulk storage rooms, situated one above the other, thus permitting cold air delivered to the upper room to circulate downward to the room below, and (2) using greater-than-standard thicknesses of insulation.

The air-gap construction eliminates duplicate equipment, ducts, diffusers, etc.

in the lower room as well as reducing refrigeration capacity and maintenance. The floor between the storage rooms is supported on columns rather than by the walls of the building.

The extra mineral wool insulation results in an appreciable reduction of operating time and power costs. The outside walls, floor, and ceiling are insulated with 14, 16 and 18 inch thicknesses respectively.

The men shown in the photograph are receiving seven carloads of diced carrots to be stored in transit on their way to a food processing plant. The lathing is placed between stacked cartons to prevent them from freezing together. Bulk storage rooms are maintained at -5 F.



Interior View of Locker Plant showing details of construction.



### Patching Doesn't Pay

"DO YOU want me to send the Middleton Locker Plant a statement again this month or shall I save the three-cent stamp?" Ann Mason who is the office force of the Acme Electric and Refrigeration Company raised her voice so the two partners that own the business could hear her.

Bill Winters and Tom Clark, the owners, looked at each other several seconds before speaking. Tom, who usually handles most of the financial affairs, broke the silence. "Just lay the statement aside. I'll talk to Dick about it."

"How much does he owe us now," Bill asked without needing an answer.

"It's around three hundred dollars, not counting that drier and seven pounds of Freon we used last week." Tom rubbed his chin reflectively. "Just about enough for that Neon sign and some new tools we've been figuring on getting," he added.

"Guess we should have quit doing work for them on a credit six months ago," Bill said. "But we kept hoping that Dick Green would get the place operating at a profit."

"Yeah," Clark agreed, "it's too bad Dick put all his money and more that he borrowed in that plant. I tried to tell him it was a lemon."

"The equipment isn't so bad," Bill pointed out. "The two five-horse condensing units are okay and the water defrost coils not so bad except they are not large enough to balance the condensing units," he added.

"That's correct," Tom nodded. "The trouble is the way the job was put in. We have fixed two dozen leaks at con-

nections and I'll bet there are that many more."

"It's a haywire job, all right. Fred Sharp was figuring on selling when he built it. Fred's cousin from Pueblo installed the equipment. He works in a garage there and tries to do a little refrigeration work on the side, so Fred told me." Bill started gathering up his tools to go out on a service call.

"Yes, I remember," Tom said dryly. "About all the tools he had was a Crescent wrench and a pair of pliers—borrowed most everything else. I went over one day to get our tube cutter and flaring tool and he was using a gasoline blow torch to silver solder inch and a quarter tubing. The joints looked like they had beads strung around them."

"And most of them had pinhole leaks," Bill added as he picked up his tool-box and started towards the back door. "I'm going to Brown's Grocery and finish hooking up his meat case," he said over his shoulder as he left the shop.

Tom started to work on a refrigerator that had developed a chronic case of stopped up screen, sticking float valve, and too much running with too little cooling.



"Looks like someone used fifteen-cent oil in this."

Tom purged the SO<sub>2</sub> from the machine, discharging the gas into a bucket of household ammonia to neutralize the odor and fumes. He then disconnected the condensing unit and set it on a bench about two feet high built for the purpose.

Bill returned just as Tom finished dismantling the compressor.

"Did you finish connecting up the meat case?" Tom asked.

"Yeah," Bill told him. "May have to drop back by tomorrow and change the setting a little. What do you find wrong with that box?"

"Come here and I'll show you a darned good argument against using poor quality oil." Tom pointed at the bottom plate recently removed from the compressor, then at the inside of the crankcase.

There was sludge more than half an inch deep on the plate. The inside of the crankcase was slimy with sludge. The flapper valves and seats were carbon coated and corroded.

"Looks like someone must have used fifteen-cent-a-quart automobile oil in it," Bill remarked. "I have an idea you'll find the evaporator in about the same condition and the receiver also," Bill added. "I'll take the float assembly out and clean it if you like."

The procedure in such cases was pretty well standardized. All of the compressor parts were washed in a naphtha cleaning solution, then rinsed with carbon tetrachloride to remove the cleaning solution and moisture. The receiver was disconnected and treated in a similar manner, also the evaporator. A re-conditioned float valve assembly was used and the one removed laid aside to be repaired later at a slack time. A new valve plate and flapper valves were installed in the compressor along with a new seal connecting rod and the solid piston replaced with one using rings.

"Going to bake it out?" Bill asked when Tom started to reassemble the condensing unit.

"Should be done," Tom replied, "but they are in a hurry. I'll blow it out with CO<sub>2</sub> gas, then pump a vacuum on the system. That'll remove most of the moisture. A drier in the line should finish the job."

After blowing the unit all out with CO<sub>2</sub>, Tom connected a service line to the discharge side of the compressor and placed the end of the line in a glass about half filled with oil. He then back-seated the discharge valve and started the motor. The stream of air bubbles made the oil appear to boil violently at first, then the bubbles gradually decreased until there were none.

"Looks like there are not any leaks,"

Bill observed as he watched the oil for bubbles that didn't appear.

"Yeah—compressor works good too." Tom pointed at the gauge connected on the suction side.

Tom closed the valve in the service line, lifted the end from the glass of oil and connected it to a drum of SO<sub>2</sub> that was lying in the pan of a pair of scales suspended nearby. He had long since learned that the quickest way to fill a low-side float job correctly was by weighing the gas used.

While the two boys worked they talked about various things, finally coming back to the subject of the locker plant and the uncollected bill.

"You know," Tom said, "I feel sort of guilty about the mess Dick Green is in."

"I don't see why. We both tried to talk him out of buying it," Bill pointed out.



"Do you think the plant can show a profit?" McKenzie asked.

"That's right, too, but about that bill. In the first place we didn't live up to our policy when we kept patching it up instead of putting it in condition right from the start. Oh, yes, I know—that's what we wanted to do, but Dick wouldn't go along with it. He wanted to just keep it going until he got money ahead."

"And he got behind instead," Bill cut in. "He loses the plant and we lose three hundred bucks."

"Maybe not," Tom said. "If you'll finish filling this outfit and check it, I'll go see if I can't do something about it."

Instead of going to the locker plant, Tom headed for the one and only First National Bank of Middleton. It was after closing time, so he went to the



back door and knocked. Ed McKenzie, president of the bank opened the door and invited Tom in.

"Got another job that you need some cash to handle?" McKenzie asked.

"No, I want to talk to you about the locker plant," Tom said.

The banker slowly shook his head. "I'm afraid Dick is about through. We have carried him long as we can. Looks like the place may have to be sold."

"Be a little difficult to find a buyer, won't it?" Tom said. "Not many people want to buy a losing proposition."

"No," McKenzie agreed, "but the equipment and property should bring enough to pay off the bank."

"It would bring more if operating properly, wouldn't it?" Tom asked.

"Might," but I understand it would take quite a sum to put it to operating properly." The banker began to fiddle papers.

### **Selling Is Not the Answer**

"Well, if the place is sold under a foreclosure, we lose three hundred dollars, Dick Green loses his investment, the town loses the locker plant and part of the business that goes with it." Tom looked the banker in the eyes and spoke earnestly.

"That's all true," McKenzie agreed, "but my first duty is to protect the interest of the bank. I judge you have a plan."

"That's right, and to make it brief, it will require between six and eight hundred dollars to get the locker plant in condition, two-thirds of it material. If the bank will advance the money against the plant for material and parts, we'll do the work and wait for our money."

"Do you believe the plant can be made to show a profit?" McKenzie asked, "with Dick Green running it."

"Yes, sir. Dick is a good meat man. By reducing operating cost and getting the plant so people have confidence in it, the plant should pay out."

"Okay," McKenzie snapped. "We'll loan up to five hundred for additional parts and equipment. Can you do it with that?"

"I think so." Tom thanked the banker and left.

Next morning Bill and Tom went to

the locker plant. First they had quite a talk with Dick.

"When do you want to start?" Dick asked after reluctantly agreeing to the plan.

"Can't start until we get that locker room colder than it is," Bill said. "The temperature is up to 16 which is warmer than it should be now."

"Well, let's lock the door and see if we can get it cold enough by morning to shut down one of the machines and start work on it," Tom suggested.

Next morning the temperature was only down to 7 above, despite locked door and both machines running continuously, but they decided it wasn't going to get much better and went to work.

"Shall we save the Freon?" Bill asked.

"No, it's about half air and so wet you can wring water out of it. Let it blow out," Tom replied.

### **Rework System**

They didn't have another evaporator so they made a return bend of inch and a quarter tubing the length of the forty-foot room and connected it in the suction line to trap liquid refrigerant and prevent frosting back as it had been doing.

Using an oxyacetylene torch to get quick heat in the cold room, they re-sweated every joint and made certain the silver solder flowed. A heat exchanger was installed to increase the efficiency and an oil trap put in the line.

"Guess we had better put in a new expansion valve while we are at it," Bill said. "This one never has worked right. Whoever built it didn't think much of it. I've never seen it advertised."

"And a new drier," Tom added, "one that will take the moisture out and let the gas go through."

When the work was finished, they pumped a vacuum to test for leaks, then they blew all the lines and evaporator out with CO<sub>2</sub>, pumped the CO<sub>2</sub> out and filled the system with F12.

"Now this thing should work better," Bill commented, "and keep it cold until we can get a new coil to put on the other machine."



"Yeah," Clark began to gather up his tools, "then when we replace these single phase motors with three phase, that should reduce the electric bill considerably. Besides being more efficient, the rate is lower for three phase."

Next day the locker room was down to 2 above and by night for the first time in months the motors shut off.

The boys waited to get the new evaporator before working on the other unit. In the meantime they changed the wiring and put three phase motors on the units.

Two months later Dick Green came to the Acme Electric and Refrigeration Company. "Here's a hundred on what I owe you. There'll be more every month until you are paid. The savings on my electric bill will soon pay what I owe you," and Dick fairly beamed. "We had a little money left this month after current bills were paid."

"We went a long way around to collect three hundred bucks," Tom commented after Dick had left.

"And re-learned that patch work doesn't pay," Bill added.

## ALUMINUM APPROVED FOR DUCT INSTALLATIONS

THE National Board of Fire Underwriters has approved aluminum for use in the installation of ducts for air conditioning, warm air heating, air cooling, and ventilating systems. The approval has been granted on the recommendation from the Committee on Air Conditioning of The National Fire Prevention Association. The Committee's recommendation is based on a careful study of aluminum's satisfactory performance in a large number of duct work applications.

The 1948 edition of NBFU Pamphlet Number 90 will be issued soon and will contain the revision to include standards for ducts constructed of aluminum. The standards will cover installation for residences as well as for industrial buildings. Copies of the standards may be obtained from National Board of Fire Underwriters Offices at 85 John Street, New York 7, N. Y.; 222 West Adams Street, Chicago 6, Illinois, or Merchants Exchange Building, San Francisco 4, California. They may also be secured through local fire inspection bureaus which work closely with the NBFU.

The new changes include a section which points out that aluminum, cadmium plated or zinc-coated hardware and fittings, such as nuts, bolts, clamps, sheet metal screw and rivets should be used in the fabrication and erection of aluminum duct work.

Aluminum weighs only one third as much as galvanized metal, which is an important factor in sheet metal erection since it permits one or two men to handle the largest size ducts.

The approval of aluminum for use in ducts by NBFU enables this metal to continue expanding its contributions to the building industry. Since it was first introduced into the building products field, aluminum has rapidly adapted itself to a large number of applications. It has already been accepted for use in siding, roofing, gutters, downspouts, windows, insulation, wall panels, ceiling panels, sills, jambs, thresholds and other structural shapes, doors, stair nosings and termite shields. Aluminum nails for many different types of building materials also are now widely used.

Aluminum has properties which make it highly adaptable for use in ducts. It is easy to install and presents a pleasing appearance. Smooth uniform seams enhance this naturally attractive appearance. Gradual weathering changes the original bright finish to a soft, gray surface which requires no painting. This surface remains attractive because aluminum cannot rust or discolor and will retain its original sales appeal without paint or other protection. Even under severe conditions, tests have shown that aluminum ducts are capable of giving much longer service than ducts constructed of conventional materials.

Builders who have become more familiar with aluminum are capitalizing on its inherent advantages of immunity to rust, high corrosion resistance, light weight and excellent workability in the solution of many building problems. This increased use has naturally pushed aluminum into a more competitive field in the building products field and made it even more attractive to other users who are interested in incorporating its advantages.

# Brazing Fittings with Silver Brazing Alloys

By A. F. SWIFT and J. C. POWERS, JR.\*

**L**OW-TEMPERATURE silver alloy brazing with Easy-Flo or Sil-Fos is extensively used for joining pipe and tubing because it makes assemblies that are strong, permanently leak-tight and maintenance-free, and is an extremely simple, low-cost process. Anyone who knows how to use an oxyacetylene torch can quickly become proficient. It is merely a matter of following the correct procedure as covered by the instructions in this article. These instructions apply to the brazing of fittings to both pipe and tubing. For simplification, only the word "pipe" is used. Also, the procedure is exactly the same when brazing with Easy-Flo or with Sil-Fos.

## Preparation

### 1. Cutting and Fitting

- a—Cut pipe to length. Make sure ends are cut square. Use of a square and sawing vise is recommended, Fig. 1.
- b—Remove burrs with a reamer or half-round file.
- c—Try pipe end in the fitting to be sure it has the proper close fit. Clearance should not be more than .005".
- d—Clearance should be uniform all around. When necessary, round out pipe with a sizing tool, Fig. 2. For sizing the outside of steel pipe use a standard Rigid, Armstrong or Beaver threading tool with cutting jaws, Fig. 3.
- e—Scribe a line on pipe at a distance from the cut end equal to the depth of fitting socket plus 1". This line serves as a check to make sure pipe is inserted full depth when assembled in the fitting, Fig. 4.

### 2. Cleaning

Surfaces to be joined must be free of oil, grease, rust or oxides. Clean them as follows:

- a—Practically all fittings have a coating of oil or grease. The liberal application of carbon tetrachloride with a brush is an effective method of grease removal.
- b—Clean socket of fitting and end of pipe thoroughly with emery cloth to remove rust and oxides, Figs. 5 and 6.
- c—Do not handle surfaces after cleaning.

### 3. Fluxing

- a—Immediately after cleaning, apply Handy Flux with a brush to each joint surface, Figs. 7 and 8. Spread it evenly.
- b—Avoid leaving excess flux inside of pipe and fitting. No flux is permitted inside of refrigeration assemblies.
- c—Assemble pipe into fitting immediately after fluxing.
- d—Where possible, revolve fitting once or twice on pipe to spread flux uniformly.
- e—Make scribe line check, Fig. 4, to see that pipe is inserted full depth in socket.
- f—Brush flux back over entire end of fitting all around, Fig. 9. This prevents oxidation of the end.

### 4. Supporting the Assembly

- a—Before brazing, assembly should be carefully aligned and adequately supported, Figs. 10 and 11.
- b—Arrange supports so that expansion and contraction will not be restricted.
- c—See that no strain is placed on the joints during brazing and cooling.

## Brazing

### 1. General Heating Instructions

- a—Use a low velocity bulbous oxy-

\*Engineering Division, Handy & Harman, New York.

Fig. 1

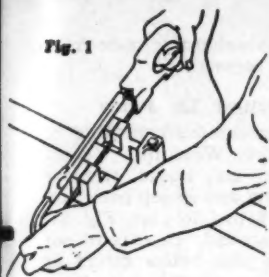


Fig. 2

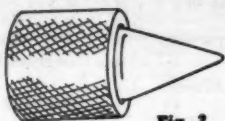


Fig. 3

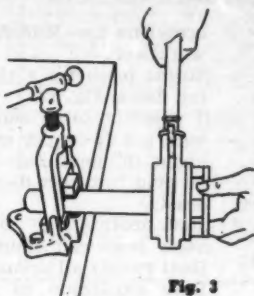


Fig. 5

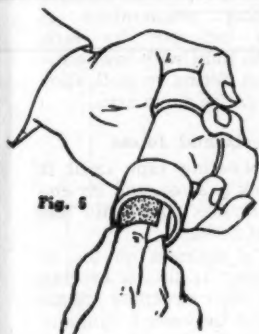


Fig. 6



Fig. 7



Fig. 8



Fig. 9

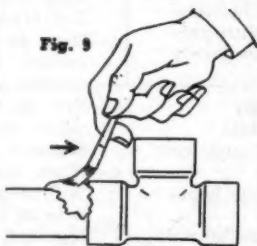


Fig. 10

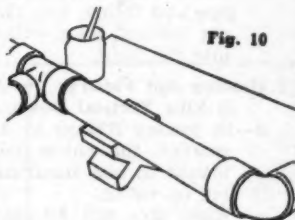
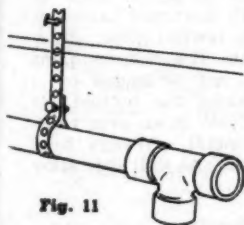


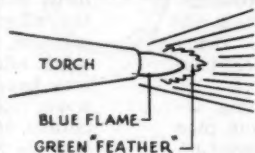
Fig. 11



TORCH

BLUE FLAME  
GREEN "FEATHER"

Fig. 12



FITTING

$\frac{1}{2}$ " TO 1"

Fig. 14

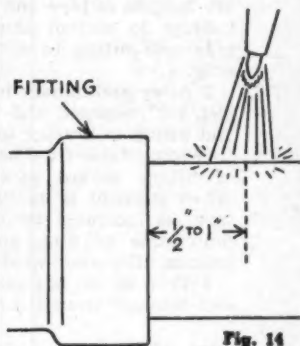
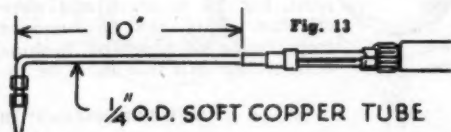


Fig. 13



acetylene tip. Multiflame tips also work well.

- b—Adjust torch for a slightly reducing flame, Fig. 12.
- c—If possible, torch should be fitted with a soft copper extension tube about 10" long, Fig. 13, so tip can be bent to direct flame where desired.
- d—Start heating pipe about  $\frac{1}{2}$ " to 1" away from end of fitting, Fig. 14. Heat evenly all around to get uniform expansion of pipe and to carry the heat uniformly to the end inside the fitting.
- e—When flux on pipe adjacent to joint has melted to a clear liquid, transfer heat to fitting, Fig. 15.
- f—Sweep flame steadily back and forth from fitting to pipe, keeping it pointed toward pipe, Fig. 15. The object is to bring fitting and pipe up to an equal heat together for application of the silver brazing alloy. Avoid letting flame impinge on face of fitting as this can easily cause overheating.
- g—When flux is a clear, fluid liquid on both fitting and pipe, pull flame back a little and apply alloy firmly, against pipe at junction between pipe and fitting, Fig. 15. With proper heating, alloy will flow freely into the joint.

## 2. Heating and Flowing the Alloy

### Making Vertical Down Joints

- a—In joining fittings to  $\frac{3}{4}$ " pipe or smaller, the entire joint can be brazed in one simultaneous heating operation.

When pipe and fittings are larger than  $\frac{3}{4}$ ", sectional heating is necessary. This is done as follows:

1. Always start with a preliminary heating of pipe and fitting according to section above. Bring pipe and fitting to a black heat only.

2. After preliminary heating, select a 2" segment and bring pipe and fitting to brazing temperature by wiping flame from back of bead of fitting toward pipe, Fig. 16. When segment is up to temperature, as indicated by clear, very fluid state of flux, apply silver brazing alloy and sweat it in.

3. Then do an adjacent segment and proceed around the pipe, be-

ing sure to overlap the braze from segment to segment.

### Making Vertical Up Joints

- a—Start with preliminary heating of pipe as before. When flux is completely clear and liquid, transfer heat to fitting and sweep back and forth from fitting to pipe, Fig. 17. Do this all around. Be careful not to overheat pipe below fitting as this will cause alloy to run down pipe out of the joint.
- b—When brazing temperature is reached, as indicated by flux, touch alloy to joint with heat aimed on wall of fitting to pull alloy up into the entire joint area.

### Making Horizontal Joints

- a—Start by preheating pipe until it shows a black heat around its entire circumference. Duplicate this procedure on fitting.
- b—Now, select a segment on top of pipe and bring it up to brazing temperature by sweeping flame back and forth between fitting and pipe. Then apply alloy, Fig. 18(1), after which, remove heat and allow alloy to set.
- c—Then do one side, starting below center, Fig. 18(2). Be sure to overlap the top brazed segment.
- d—Next do the other side, Fig. 18(3), again being sure to overlap top segment.
- e—When both sides are done there will be a globule of alloy on each side at the bottom of the brazed segment, Fig. 18(3). Apply heat on bottom of fitting at back of bead and with the usual back and forth motion toward pipe, draw the alloy into the bottom joint segment. Do not be fooled by a large fillet along the bottom. It may have flowed down over relatively cold metal. Always heat bottom of fitting to pull this alloy into the joint.

## 3. Cleaning After Brazing

- a—Immediately after brazing alloy has set, apply a wet brush or swab to joint, Fig. 19, to crack and wash off flux. Flux can be removed from inside of pipes by flushing with water. All flux must be re-

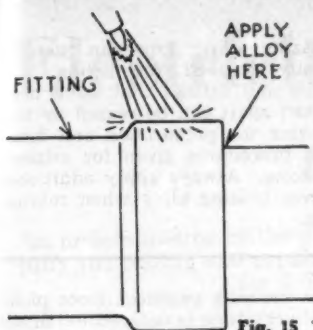


Fig. 15

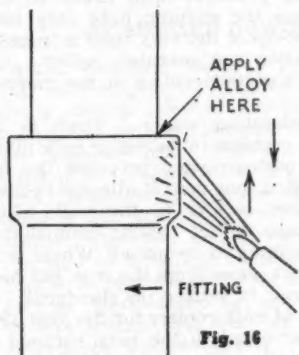


Fig. 16

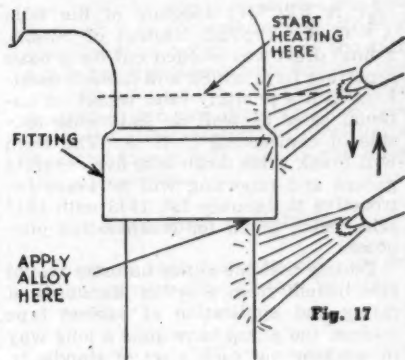


Fig. 17

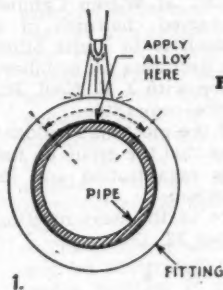
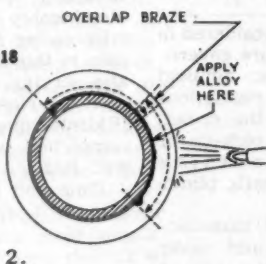
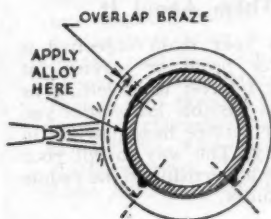


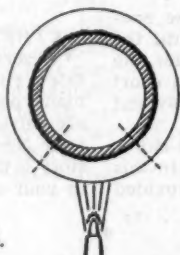
Fig. 18



2.



3.



4.



OXYACETYLENE TORCH<sup>a</sup>  
TIP SIZES

APPROXIMATE CONSUMPTION OF  
BRAZING ALLOY IN LINEAR INCHES

For Pipe Size (inches)	Torch Tip Drill Size No.	3/4" Alloy Wire	1/2" Alloy Wire	1/4" Alloy Wire
1/4	55	1 1/2	3/4	....
3/8	55	2	1	....
1/2	53	3	1 1/2	3/4
3/4	53	4	2	1
1	50	....	3	1 1/2
1 1/4	50	....	4	2
1 1/2	46	....	....	2 1/2
2	42	....	....	3 3/4



moved for inspection and pressure testing. Use a wire brush if necessary.

#### 4. To Take Joint Apart

a—When necessary, joint can be taken apart as follows:

Reflux entire joint area. Then heat entire joint uniformly to slightly above melting point of

brazing alloy. Pipe can then be easily removed from fitting.

Pipe and fittings that have been taken apart can be reused by following the preparation and brazing procedures given for original brazing. Always apply additional silver brazing alloy when rebrazing.

### R.E.M.A. Milk Cooler Section Works Out Sales Report

**A**T A RECENT meeting of the Milk Cooler Product Section of REMA, a final draft was worked out for a basic reporting form which will furnish members with a monthly sales report on national sales as well as shipments outside of continental U. S. A. The form will break sales down into five separate groups and reporting will be made retroactive to January 1st, 1948 with 1947 sales being given for comparative purposes.

Feeling that the entire industry would also benefit from a set of standards of rating and application of cabinet type coolers, the group have gone a long way in working out such a set of standards. They feel these standards will be acceptable not only to the industry, but also to the many associated and interested groups who are concerned with the advancement and improvement of milk cooling equipment.

Among the factors being considered in drawing up these standards are government and local regulations, ambient temperatures, bacteria count regulations for graded milk, design of the cooler, storage time, milk can size, pick-up or delivery schedule, milk handling methods and regulations of milk plants or processor.

It was felt necessary that manufacturers published ratings should cover cooling range and time under each of the following three conditions:

1. When the producer cools the evening milk, holds it in storage until the morning milk is placed in the cooler, the morning milk being set out for a short time until it is picked up or delivered by or to the processor.

2. The producer who cools and stores both evening and morning milk; in this case efficient storage must be provided

for all of the milk produced since pick-up or delivery time is delayed too much to permit the evening milk to be set out of the cooler.

3. The producer who needs to cool and store the evening milk only since the pick-up or delivery time is immediately after the morning milking and does not permit cooling of the morning milk.

Consideration was not given to the cooling problem in dairies or milk plants where pasteurization precedes the initial cooling, nor does it attempt to cover any other cooling of the milk where other than initial cooling immediately after milking is required. Whole milk only, as it comes from the cow, has been considered in setting up standards.

Sales of milk coolers for the year 1947 were estimated in the neighborhood of 50,000 units with an estimated market for 60,000 milk coolers in 1948.

J. E. Wilson, Jr., of Wilson Cabinet Company, was named chairman of a Membership Committee to invite other milk cooler manufacturers to membership in this Section with J. K. Noel, Jr., also serving on the committee.

At the close of the meeting President Hildreth complimented the group on the completion of its organization and its well laid out program.

Time and place of the next meeting was set for October 22, 1948.

★ ★ ★

### Tell Them About It

**W**HETHER your main objective is service for profit or service for sales, your big interest is in letting as many people as possible know that you are refrigerator service headquarters in your community. The way to tell your story is through advertising to the people in your community.



# Electricity as applied to Refrigeration

An understanding of the purpose and arrangement of windings will simplify the testing and repair of motors and generators and their alteration for different operating conditions.

## Second Article

BY EDWARD DOWIS

ALL electrical machinery operates according to well known and relatively simple laws of electromagnetic induction. A motor operates because of the tendency of a conductor carrying current, to be thrown out of a magnetic field. A generator produces voltage because a conductor, when moved across magnetic lines of force, will have a voltage induced in it. The purpose of windings is to produce as strong a magnetic field as required and get as many conductors within that field as necessary to produce the required power, speed and voltage without heating to the point of burning out. Since there is no essential difference between the windings in generators and in motors, the two can be considered together. In actual operation, motors are acting also as generators and producing counter voltage, which is the reason why at starting, or under heavy load which tends to slow down the motor, the counter voltage decreases, allowing more current to flow through the windings.

The principle underlying all windings can be illustrated by the most simple motor possible to construct; that of a single wire, carrying current, and placed in a magnetic field as illustrated in Fig. 6 (the numbering is consecutive, following part 1 on fundamentals which appeared in the October issue.) If current is sent through this wire, as indicated, a magnetic field will be set up around the wire as indicated by the small arrows. This will distort the main field as indicated by the dotted

lines and there will be a tendency for the wire to rotate counter-clockwise. Another way for determining direction of rotation of a coil is to use the right hand, holding thumb and first two fingers at right angles. If the forefinger is used to indicate direction of current flow, the third finger the direction of flux, the thumb will point in the direction of rotation.

### Direction of Rotation

It can be seen from the diagram that if the current through the winding is

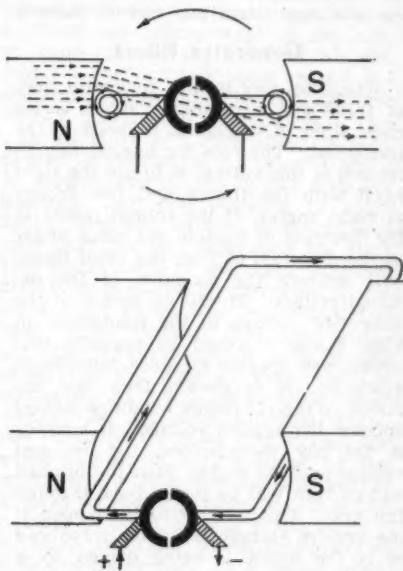


Fig. 6—Essentials of one coil motor.

reversed, rotation will be reversed, or that if the field poles are reversed, rotation will also be reversed but if both field and armature windings are reversed at the same instant, rotation will remain the same. Direction of direct current motors can be reversed by reversing either field or armature connections but not both. It will be noted that the brushes are so placed that when a wire passes from the north to the south pole the direction of current is reversed by the commutator bar passing to a brush of opposite polarity, keeping rotation continuous. All that is necessary to convert this simple coil to a complete winding is to increase the number of wires and distribute them uniformly around the magnetic field so that all the wires under north poles will carry current in one direction and under south poles in the opposite, as indicated in Fig. 7. It will be seen that the current through the windings induces poles on the face of the armature which, because like poles repel and unlike poles attract, will produce rotation in a counter-clockwise direction when current and poles are as indicated. This principle operates, as we shall see later, in both direct current and alternating current motors.

### Generator Effect

When, by any means, magnetic lines of force and a conductor move across each other, a voltage is induced in the conductor. The rule for finding the direction of this voltage is to use the right hand with the thumb and two fingers at right angles: If the thumb points in the direction of motion, the index finger in the direction of flux, the third finger will indicate the direction of the induced voltage. It will be seen that the generated voltage in the conductors in Figs. 6 and 7 would be opposite that which was applied to cause rotation in a motor. It is always true that induced voltage in motor windings always opposes the applied voltage. If a motor is forcibly overspeeded the induced voltage will be higher than the applied and current will be forced back through the line. This may actually happen if the applied voltage is suddenly reduced or if the motor is being driven by a loaded elevator, using the motor as a brake.

It is the generator effect which largely determines the characteristics of a winding. Compared to the voltage, the resistance of a winding is very low, ranging from four or five ohms for a fractional horsepower A.C. stator winding, to a small fraction of an ohm for armature windings of larger sizes. If 110 volts were applied across a winding of even 4 ohms, the current would be  $110 \div 4$  or  $27\frac{1}{2}$  amperes, enough to cause a burn out of this small winding in a very short time. It is necessary to have enough turns in series, enough speed and enough magnetic flux to produce a counter-voltage equal to the applied, less only that necessary to overcome the resistance.

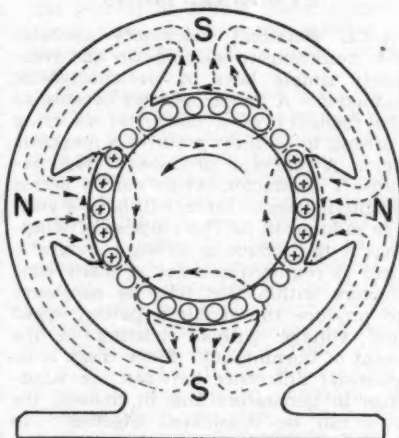


Fig. 7—Flux distribution in four pole motor.

The voltage induced in any conductor is determined by how fast it is cutting lines of magnetic force. It is assumed that a conductor cutting lines at the rate of 100,000,000 lines per second will have an induced voltage of 1 volt. Referring to Fig. 6, assume that the field has 100,000,000 lines of force across it and the one wire coil is moving one revolution per second. As each side of the coil must move through the field twice per second (once past each pole) the average voltage in each side of the coil will be 2 volts. Since both sides are in series, the average voltage across the brushes will be 4 volts. This voltage can be increased by either of three ways:

1. Increasing the speed.

If the speed is increased to 2 revolutions per second each of the coil sides will cut the field 4 times per second for four volts per side or 8 volts across the brushes.

2. Increasing the flux.

If the field strength is increased to 200,000,000 lines of force each side will cut the field twice each revolution and, at 1 revolution per second 4 volts will be induced for each side, or 8 volts total.

3. Increasing the wires in series.

If the coil is increased to two turns, each wire will have the same voltage and the voltage increased in proportion to the number of coils and turns in series between brushes.

In practice, a motor will attempt to come up to a speed which will enable it to produce a voltage almost equal to the voltage applied so high speed is attained with few armature turns and lower speed by more turns in series.

### Arrangement of Coils

Coils in armatures may consist of any number of turns and may be wound directly on the armature core or wound on a form and laid in the slots. The slots are first insulated with a tough insulating paper and sometimes varnished cloth in addition. Motors for high temperature operation may have the slots insulated with mica, woven glass or some other special insulation. A fiber disc, the same shape as the end of the armature is placed on each end, or the slot insulation permitted to extend beyond the end of the core to prevent grounding the wires where they extend from the slots.

The coils in an armature are connected to the segments of a commutator, which is simply a number of segments, insulated from the frame and shaft, and from each other, usually by mica. The commutator is arranged so that brushes made of carbon, usually, can slide along the surface and deliver current to, or collect it from the windings as the armature rotates. In the repulsion induction motor the brushes are used to short circuit the armature coils through the brushes in such a way that the current induced in the armature by the alternating current in the stator winding will have to flow in

such a manner as to start the motor, after which the commutator is shorted out by a mechanical device in the armature and the brushes sometimes lifted off the commutator. This motor will be described in more detail, but is mentioned here because the armature winding is identical with that of direct current motors.

There are usually the same number of slots and commutator bars in armatures or the number of bars may be a multiple of the number of slots: Thus, there may be 36 slots and either 36, 72 or 108 bars. There may occasionally be one more or less than this number. When the number of slots and commutator bars is the same, there are as many coils as slots and since there are two sides to each coil and each side must occupy a slot, there will be two coil sides in each slot. Where the number of bars is a multiple of the number of slots, two or more coils are wound together, placed in the same slots, but connected as separate coils.

### All Connected Alike

All the coils in a given armature are connected in the same manner, so it is necessary to know or find only the connections and arrangement of one coil, to know the arrangement of all the others. The coil will span around the armature, approximately the distance from 1 pole to the next. Thus, a two pole armature will span about  $\frac{1}{2}$  way around the armature, a four pole, about  $\frac{1}{4}$  around, and so on. In two pole armatures, each coil connects to adjacent commutator bars or, rarely, to bars with only one bar separating the start and finish leads of the coil. Multiple armatures may also be connected in this manner, in which case the winding is called a lap winding. In a wave winding, the arrangement of coils is the same, but the ends of each coil are connected to bars about half way around the armature for four poles, one-third for six poles and so on. The exact number of bars spanned by the connections to a given coil will be the number of bars, divided by half the number of poles, plus or minus one.

Fig. 8 illustrates the arrangement of coils and connections for a wave wound, four pole armature having 13 slots and 13 commutator bars. (A four pole ar-

mature, to wind wave, must have an odd number of bars.) The coil will span about  $\frac{1}{4}$  around the armature or from slots 1 to 4, 2 to 5 and so on, as illustrated. The numbers on the outside of the diagram are to indicate slot numbers. The small circles represent coil sides, the numbers inside, coil numbers. The dotted lines show the span

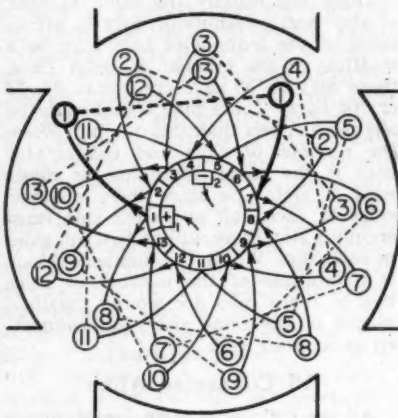


Fig. 8—Four pole wave winding.

of the coil at the back of the armature and solid curved lines the coil connections to the commutator. The numbers in the inner circles represent the commutator bars. The coil and connections illustrated by the heavy lines set the pattern for all the other coils. As explained in the previous paragraph the number of bars spanned by the coil connections for any coil will be  $13 \div 2$  or  $6\frac{1}{2}$ . Therefore, if one lead is connected to bar No. 1, the other will be connected to 1+6 or to No. 7. To illustrate how current flows through a wave wound armature, we will place two brushes at right angles on the commutator, through which current can be delivered to the armature. (Brushes are placed at the same angular distance on the commutator as the poles.) Assuming that current flows in through the positive and out the negative brush, you can see that it flows through two paths or circuits from bar 1; starting through coil 1 and coil 8. Through coil 1, current flows back through slot 1, forward through the opposite side in slot 4 to bar 7, out through coil 7, in

slots 7 and 10, continuing until it reaches the negative brush. Through coil 8, also connected to bar 1, current flows successively through coils 8, 2, 9, 3, 10 and 4. Coils 5 and 11 are shorted out by brush 2 and carry no current at this instant but it will be seen that the coils in slots 2, 3 and 4 carry current forward, in 5, 6 and 7, backward, 8, 9 and 10, forward, and 11, 12, 13 and 1 backward, indicating the position of the four field poles.

### Four Pole Motor

Fig. 9 shows the coil arrangement and connections for a 12 slot, 12 bar armature, lap wound, for four poles. You will note that the only difference is that the coils connect to adjacent commutator segments. Lap windings require the same number of brushes as field poles, spaced equally around the commutator, with alternate brushes connected to the same line. In tracing through the positive lead, current will flow in and through brushes 1 and 3 and out through 2 and 4. There are two paths from each brush so there are four circuits through this armature with  $\frac{1}{4}$  of the total number of coils in series in each circuit. It will be seen,

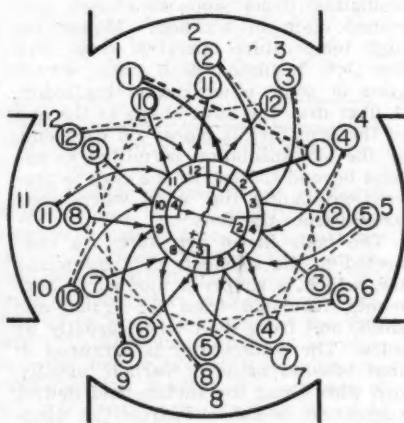


Fig. 9—Four pole lap winding.

that with a wave winding, approximately half the coils are in series, regardless of the number of poles, there being but two brushes necessary. With

a lap winding the number of coils in series will be approximately the total number divided by the number of poles or brushes. Consequently, with the same number of coils and turns per coil a wave winding will operate at a higher voltage and lower amperage than a similar lap winding.

All two pole armatures are lap wound with two brushes and two circuits through the armature. All direct current and universal motors and alternating current repulsion-induction motors, have wound armatures such as here described.

### Universal Motors

The field windings of direct current and universal motors are simple coils surrounding the pole pieces. When connected in series with the armature, the motor is called a series motor. (All universal D.C. and A.C. motors are series motors.) In series motors, the speed varies with the load and at light load may race so fast as to wreck the armature. At heavy loads, while the speed will slow down, the torque will be very good. The reason is, that as the speed slows down, the counter voltage falls, allowing the applied voltage to force a heavy current through both field and armature.

When the armature is connected in parallel with the field, the speed will be practically constant. It can not exceed that which will produce a counter voltage slightly less than the applied. If overloaded, this motor will just pull out and stop, as the decreasing counter voltage does not permit added field strength to support the heavy load. This type of motor is called a shunt motor.

The compound motor is a combination of series and shunt, with one field winding in series and one parallel with the armature and combines the desirable features of the series and shunt motors. The words series, shunt or compound refer only to the manner in which the field and armature are connected in the circuit and not to armature windings.

A discussion of alternating current motors, their windings and construction will follow in a subsequent article.

(To Be Continued)

## FIN COILS

**I**N GENERAL, the selection of the low side equipment should be made from the catalog specifications of the manufacturer from whom the equipment will be purchased. However, a brief explanation here will serve as a guide in estimating the capacity of the coil in an existing installation when making a survey of the equipment.

The individual manufacturer's rating of his coil may not agree with the results obtained with the following method because of the variation in "K" values assigned to coils. The method, however, will be found sufficiently correct for average estimates.

After the Btu. per 24 hours of the fixture has been determined, and assuming the equipment is to be operated 16 hours per day, the size of coil required may be found by the following formula:

$$\frac{\text{Btu. daily load}}{16} = \text{Btu. per hour}$$

$$\frac{\text{Btu. per hour}}{(\text{"K"} \times \text{T.D. (air and refrigerant)})} = \text{Sq. ft. of coil surface}$$

The temperature difference between the air surrounding the coil and the refrigerant in the coil is governed by the relative humidity required in the fixture. For the average application this temperature difference should not exceed 20 degrees and not be less than 12 degrees for fin coils installed in still air. A temperature difference of 15 degrees will provide a relative humidity of from 80 to 85 percent. An increase in temperature difference will reduce the humidity and a decrease in temperature difference will increase the humidity.

### Multiplexing

When the temperature difference in one coil of a multiple system exceeds 20 degrees it will be necessary to install a constant pressure valve in the suction line of this coil to maintain a higher refrigerant temperature, thus keeping the temperature difference within the 20 degrees.





## Oil and Methyl Plus Lighted Match Equal Damage

By F. B. Frazee

IT IS not hard to guess what will happen when a mixture of oil and methyl chloride comes in contact with a lighted match but the pictures on this page leave little to the imagination.

It was on Saturday afternoon, October 2nd, when a Danville, Illinois, distributor received a call to service one of their war-time installations at the Battani Cafe in Westville, Ill. The job was a direct draw beer cooler which was installed about two years ago with used equipment and employing methyl chloride as a refrigerant. The condensing unit was located under the bar adjacent to the cooler.

The serviceman who took this call reported that he tried for nearly an hour to pump down the system but that he was unable to pump out the liquid line

While a serviceman allows a mixture of oil and methyl to accumulate and run across the floor, another man carelessly tosses a lighted match into it. The results are shown in these three photos.

due to a restriction. He closed all the condensing unit valves and disconnected the liquid line at the receiver. In draining this line, a considerable quantity of refrigerating oil was released which formed a pool and spread from the back of the bar along the floor to the front of the bar.

A pipe smoker, using kitchen matches, in looking around for a convenient cuspidor into which to throw his lighted match, spotted this growing puddle. Thinking it was water, he tossed his match into it.

Fire rolled along the oil back to the motor compartment where there was a sufficient concentration of methyl to cause a flash. Battani made a practice of oiling the compressor daily and the accumulated oil contributed largely to the resulting fire which was confined to the bar.

At the time of the flash the serviceman was looking for rags with which to mop up the oil and escaped injury. The fire destroyed part of the bar and the old unit which has now been replaced with a new one.

★ ★ ★

SERVICEMEN throughout the country depend on and take great pride in their tools and their skill in using them. They demand the finest quality available, for even on the simplest operation fine tools pay big dividends in speed, good workmanship and greater safety.



# SERVICE

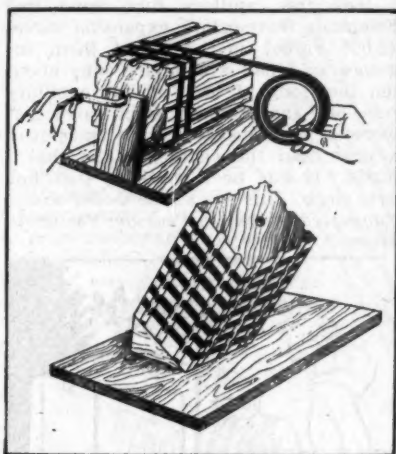


# POINTERS

A department for the exchange of ideas on new devices and methods of improving service work. Five dollars is paid for each pointer published. Write up your idea today and mail it to the Service Pointer Editor.

## Short Lengths of Tape Easily Dispensed

WHERE an electrical installation calls for many short pieces of tape of uniform length, considerable time can be saved by cutting a large number of pieces at once so that the installer can pick them off quickly as needed. A simple device for cutting electrical tape in this way and holding it conveniently



for use is shown herewith. It consists of a wooden block with longitudinal grooves cut in it, the grooves being spaced so that when a layer of tape has been wound evenly on the block it can be cut quickly into short pieces of the desired length by running a razor blade or a very sharp knife down each groove.

To simplify winding tape from the roll to the cutting block the latter is

mounted on a spindle as illustrated (top) and rotated with a simple crank handle. When wound full and the tape cut into the desired lengths, the block is placed upright on a base as shown in the bottom illustration.—From the *Minnesota Mining & Mfg. Co.* booklet on *Scotch Electrical Tapes*.

★ ★ ★

## Testing Coldspot Compressor and Check Valve

HERE is one way to test the old check valve and determine if a replacement is needed and also to know, before the unit is recharged, that the compressor will pump enough to handle the evaporator.

1. Assemble a  $\frac{1}{4}$  inch male flare to female  $\frac{1}{8}$  inch pipe half union to a  $\frac{1}{8}$  inch by  $1\frac{1}{2}$  inch pipe nipple. Silver solder the joint.
2. A  $\frac{1}{4}$  inch male flare to a  $\frac{1}{8}$  inch male pipe half union.
3. One  $\frac{5}{16}$  inch by  $1\frac{1}{2}$  inch S.A.E. thread bolt. Drill a small hole through the length of it. Drill the head end  $\frac{1}{8}$  inch deep with a  $\frac{1}{4}$  inch drill and silver solder a length of  $\frac{1}{4}$  inch copper tube into this hole.

Rebuild the unit and leave off the dome and the end muffler cup on the compressor. Install the service valve on the charging valve. Attach compound gauge to this valve. Screw fitting described in (1) in place of the discharge oil separator near the top and either (2) or (3) in the oil inlet at the bottom of the housing. A  $\frac{1}{4}$  inch tube from (2) or (3) immersed in a pan of compressor oil placed just below the compressor will feed oil through the compressor and it will return to the pan. Screw expansion valve all the way out. Run the compressor. After the oil is feeding through the compressor the gauge should read at least 28 inches. Keep adjusting until it does. You can get 29 inches. Now screw the expansion valve in until the gauge reads about 25 inches with the oil com-

ing out of the small discharge hole in the compressor end plate. Press your little finger tightly over this hole. It should squeal and the gauge must not move toward zero. Do the compressor over until you cannot move the gauge to less than 15 inches. You will be unable to hold the hole tightly enough to raise the reading if the compressor is good.

If your compressor passes this test you will find that the unit will perform perfectly after it is charged and you will not waste time purging down and doing the job over and over.

### To Test the Check Valve

Attach gauge to (1) fitting. Run motor. Screw expansion valve all the way in. The gauge should read at least 28 inches. Stop motor. The gauge reading should not change toward zero unless the check valve leaks. Any leak in the condenser, receiver, evaporator, expansion valve or suction line will be indicated on the gauge and everything except the seal and oil line is tested. If the check valve leaks it should be replaced by a complete new one and this test repeated.—Submitted by L. K. Willis, Long Beach, Calif.

★ ★ ★

### Soda Straw for Oil Gauge

TO CHECK the oil level in those small hard-to-get-at compressors, I have found that a soda straw serves the purpose quite well. Remove the plug in the compressor body, insert the straw until it touches the bottom of the crankcase. Place your finger over the end of the straw and remove it from the compressor. By holding the straw up to the light the exact oil level can be determined.—Submitted by Evan G. Simpson, Canton, Ohio.

★ ★ ★

### Absorbing SO<sub>2</sub>

I NOTICED in the July, 1948 issue that in absorbing SO<sub>2</sub>, ammonium hydroxide is used instead of lye and water. This doesn't make a mess or smell but it does give off a white precipitate which condenses on objects near.

My idea is to use lye and water with a film of heavy oil on top of the solution. When the purge hose is put to bottom

of the pail and the bubbles of air and SO<sub>2</sub> start coming, they will rise to the top and hit the film of oil. The oil prevents the bubble from breaking through and splashing on the floor. Naturally the oil will help the lye solution to dissolve the SO<sub>2</sub> because it gives it a longer period in which it can absorb the gas.—Submitted by Thomas W. Fleming, Prince Albert, Sask., Canada.

★ ★ ★

### I Cured a Stewart-Warner

SOME time ago I did a lot of work on a Stewart-Warner refrigerator. I had almost come to the conclusion that it would never be in running order again. My last resort was successful and might be of help to other servicemen in similar circumstances.

The trouble with this job was that it was blocking off so the gas wouldn't go through. The unit was cleaned out, new capillary tube, froster, and D.P.C. valve, also driers were put on but didn't do any good. It would run for a while and it would block off again. As a last resort I took the capillary tube from two Frigidaire thermostatic expansion valves (3,000 valve) and soldered them together so I had a capillary tube about ten feet long. I took off the capillary tube and the pressure relief valve that were on the Stewart-Warner and put in a drier and the capillary tube that I made. It has been working just fine ever since. This was a 1939 model box.—Submitted by Henry Pearson, Faribault, Minn.



"Grogan you dope! It was last year you repaired television sets."

# QUESTIONS



# ANSWERS

## Making a Freezer

**QUESTION 835:** I have a G.E. Monitor top refrigerator and I am planning to discard the unit and make a deep freeze box. I intend to use  $\frac{1}{2}$ " copper tubing with a thermostatic expansion valve, and would like to maintain a temperature of 5 F. or zero. I plan on lining the box with the  $\frac{1}{2}$ " copper tubing.

How many feet of tubing will the coil take to maintain the correct temperature

and what size expansion valve should I use? I will use a  $\frac{1}{2}$  hp. unit. Is this too large or too small? I will appreciate any other suggestions you may have to offer pertaining to this box.

**ANSWER:** If I were trying to convert a G.E. Monitor top refrigerator to a freezer I would begin by building an outer box for the cabinet in which I would lay the freezer on its back with two to three inches of rock wool or celotex insulation around it. This is because the average

ALL EVAPORATOR TUBING  
MUST HAVE GOOD THERMAL  
CONTACT WITH LINER

ACCUMULATOR OR  
ACCUMULATOR DRIER.  
WHEN ACCUMULATOR DRIER  
IS USED THE LOWSIDE DRIER  
IS OMITTED.

**NOTE:**  
BOX HOUSING OMITTED  
FOR CLARITY.

**LOWSIDE DRIER**  
LOWSIDE DRIER IS PART  
OF EVAPORATOR & SHOULD  
BE IN THERMAL CONTACT  
WITH LINER. CAPILLARY  
TUBE MAY EXPAND DIRECTLY  
INTO DRIER IF ALL SOLDERED  
JOINTS ARE USED.

$\frac{3}{8}$  O.D. COPPER TUBE  
CONTACT WITH BOTH  
LINER & EVAP. TUBE  
CONTROL BULB  
EVAPORATOR TUBE

**SECTION A-A**

CONTROL BULB  
FROSTPROOF NUTS



SILVER SOLDER  
DETAIL OF EVAPORATOR AND  
CAPILLARY TUBE CONNECTION

household refrigerator contains no more than 2 or 2½" of insulation which is not sufficient for the low temperatures required in a freezer.

Without this additional insulation it is quite probable the outside of the cabinet would sweat on the hot humid days. It should not be so much of a job to build a box large enough to contain the original cabinet plus 2 or 2½" of insulation around it. It would be well to line this box with tar paper or some other sealing material and seal all joints with a sealing compound, thus making it as nearly vapor proof as possible.

For the evaporator I would arrange a sheet metal lining to go inside the refrigerator and to this lining I would solder my ½" copper tubing in a serpentine pattern. The sizing of this liner should be such that it would sit away from the cabinet liner approximately ½", thus allowing this much air circulation space between the coil and the liner of the box. The liner and its attached tubing should cover both sides and both ends of the cabinet.

The manner in which the tubing should be wound, the manner in which control bulb should be attached to the liner, and the general pattern of the circuit should be as illustrated.

You have not told me what the size of this cabinet is, therefore I have little idea of what size unit you will need. However, a ½ horsepower unit should take care of up to a 12 cu. ft. well insulated cabinet.

The expansion valve you will need will be a low temperature ½ ton valve. The number of feet of tubing will be governed by what you will require to cover all four walls of the cabinet spaced on approximately 3" centers.

### Silver Soldering Freon Systems

QUESTION 834: My attention has been drawn to the article "Installation and Service on the Tecumseh Hermetic Unit" which appears in the August, 1948 issue of THE REFRIGERATION SERVICE ENGINEER. In this article it is stated, "Silver soldering should not be done on a coil containing Freon or oil. Use either soft solder or a flare fitting." Would you be kind enough to elucidate more fully on this statement, giving in more detail the reasons this should not be practiced?

ANSWER: The statement, "Silver soldering should not be done on a coil containing Freon or oil," is due primarily to the breakdown of F-12 under conditions encountered with the high temperature required for silver soldering. Perhaps you are familiar with the fact that under high temperatures F-12 forms a corrosive gas which could, under certain conditions, contaminate the entire system. Obviously this is not possible where the tubing ends are open and this corrosive gas can escape. On the other hand, if the soldering of a condenser is attempted with the entire system connected, the corrosive gas cannot escape and there is a strong possibility that the entire system can become contaminated.

★ ★ ★

### Frigidaire Tests Show Gravity Coils Best in Vegetable Coolers

RETAIL grocery and market operators can realize a greater margin of profit from sale of fresh vegetables and fruits if gravity-type cooling units are used to refrigerate small fruit and vegetable walk-in storage rooms.

A joint study by Frigidaire Division of General Motors and the Kroger Food Foundation has revealed that gravity cooling units are far more effective than other types of equipment when it comes to preserving fresh vegetables and fruits. Air that is cold, moist and virtually non-circulating substantially reduces trim and dehydration losses and, at the same time builds up consumer acceptance of products. G. A. Hayner and R. A. Kramer, Frigidaire special product application experts, and Robert Hockman, Kroger food technologist, participated in the experiments, involving two types of equipment—gravity and forced air cooling units.

Five separate series of tests were conducted in a six by eight by ten foot walk-in cooler, in which a temperature of 40 degrees was maintained. Cooling equipment was hooked up to a one-half horsepower Frigidaire compressor. The system was operated on an automatic defrosting cycle. Approximately 225 pounds of fresh carrots, cauliflower, cabbage, celery, spinach, apples and oranges were used in each trial. Each test was



conducted over a 66-hour period, simulating conditions in the average retail store.

A dollar-and-cent interpretation of the study by Hockman revealed how a grocery or market with a fresh vegetable and fruit business, averaging \$2,000 per week or \$104,000 a year, might save nearly \$14,000 per annum by using gravity-type equipment. For example, best results were noted when gravity cooling units, with a basic rating of 384 (BTU's an hour per one-degree temperature difference) were used in a 6 x 8 x 10 feet cooler. The dehydration loss was only 1.45 per cent and there was no trim loss recorded. In addition, customer acceptance was rated at 96 per cent.

permitted only 1.66 per cent dehydration loss and 0.16 per cent trim loss. Acceptability was 91 per cent. Other gravity units of similar design but with a basic rating of 256, held customer acceptance at 84 per cent while dehydration losses were 1.94 per cent and trim losses reached 1.45 per cent.

Hayner pointed out that two important factors govern effective cooling of fresh fruits and vegetables in the retail store. "Although the installation should be designed for proper balance between the cooling units and compressors to maintain a small temperature difference," he explained, "superior results are best obtained by 'over-coiling' the job. A second point to remember," he

### Produce Cooling Test Results

Showing losses in each test computed on the basis of a \$2,000 Weekly and \$104,000 Annual Produce Sales Volume. Tests made in a 6x8x10 feet walk-in cooler equipped with a Frigidaire one-half horsepower condensing unit.

Test Number	Equipment Used	Basic Rating	Dehydration Loss	Trim Loss	Weekly Dollar Loss*	Yearly Dollar Loss*	Acceptability†
1.	Forced Air Unit**	500	4.8%	9.5%	\$286.00	\$14,872.00	64%
2.	Forced Air Unit	620	4.75%	1.77%	\$130.40	\$6,780.80	81%
3.	Gravity Units	256	1.94%	1.45%	\$67.80	\$3,525.00	84%
4.	Gravity Units	338	1.66%	0.16%	\$36.40	\$1,892.80	91%
5.	Gravity Units	384	1.45%	None	\$29.00	\$1,508.00	96%

\* From dehydration and trim losses only.

\*\* Equipped with electric humidifying device.

† Acceptability was determined after produce was trimmed.

By way of comparison, a forced air unit with a basic rating of 500, showed trim losses of 4.8 per cent and dehydration losses as high as 9.5 per cent while customer acceptance dipped to 64 per cent. Consequently, a grocery or market using a storage cooler with this type refrigeration equipment might lose about \$286 each week in sales volume or more than \$14,000 annually.

Three other series of tests in the same cooler resulted in a marked step-down in efficiency, especially for forced air units in this particular application. Produce cooled by a forced air unit with a basic rating of 620 had dehydration losses of 4.75 per cent and trim losses of 1.77 per cent, while customer acceptability was only 81 per cent. On the other hand, gravity units with a basic rating of 338

declared, "is that such produce installations should be made without baffles or drip pans. By adjusting the system to defrost on each cycle, moisture will drip onto the produce and materially aid in keeping it fresh.

"It is recognized that forced air cooling units provide superior performance for many types of applications. For example, forced air is particularly effective for meat chill rooms, pre-cooling operations and similar problems where it is necessary to quickly remove heat from the product. Then too, forced air cooling units provide an excellent answer for large storage rooms," Hayner added. "However, as these tests indicate, proper gravity coiling is preferable for bulk storage of fruits and vegetables in small walk-in coolers."





At the new Trans World Airline Kansas City frozen food pilot production kitchen, manager Edith Newton lets hostesses Doris Zink and Verla Marks try breakfast rolls, just restored from their frozen state. Cakes, pies, cookies, soups, potato and meat courses are pre-cooked and "blast" frozen at the new production kitchen, then shipped to holding kitchens over the airline's trans-continental system.

**G**OOD refrigeration engineering is putting an end to one of the worst problems of modern airline transportation—constant loss engendered in food service when flights are cancelled through bad weather, etc.

Trans-World Airline, serving most of the globe, with headquarters at Kansas City, Missouri, is attempting to solve the specific problems of uniform food quality, high airline food costs, and efficient distribution through its new "pilot production kitchen" which has been set up in Kansas City to experiment with, prepare, quick-freeze and distribute all foods which are consumed on TWA airliners. At the same time, in the \$54,000 project, TWA hopes to cut down the high meal-per-passenger cost of airplane food service, which in March of this year, when the new plant was completed, averaged \$1 for breakfast, \$1.25 for lunch, and \$1.70 for dinner.

## Quick-Freezing Solves Airline's Food Problems

By Herbert Hanley

The "pilot production plant" consists of a test kitchen equipped with all scientific apparatus for mixing, freezing, baking, grilling, and preparing foods, a huge production kitchen which can turn out six tons of food per week, a quick-freeze plant, storage facilities, and a packaging department, all enclosed in one small building. The work is carried out under food superintendent A. G. Henneforth, and dietitian E. DeMarino, in whose hands all menus for service on TWA aircraft originate, for distribution to 6 "system kitchens" located at Los Angeles, San Francisco, Albuquerque, Pittsburgh, and New York.

The pilot production plant prepares cakes, pies, cookies, soups, potato and meat courses, stews, chicken a la king, and a variety of desserts. A crew of 21 women, all specialists in particular food lines, handle the entire production job, meeting deadlines imposed by the menus set up which control all TWA food service. For efficiency, the country has been divided into 8 zones, each of which serve foods from a specific menu for a 7-day period. At the end of the 7-day period, the menus are "shuffled," thus insuring that no airline passenger will eat a "duplicate meal" even in traveling from coast to coast. In addition to this zone separation, the TWA food operation will conduct two "cycles", one for winter, and one for summer, with entirely varied food courses. Along with the 4½ and 5½ tons of food which have been shipped weekly since March 2, TWA is still using the services of 13 food catering firms at airline terminals in smaller cities throughout the country.

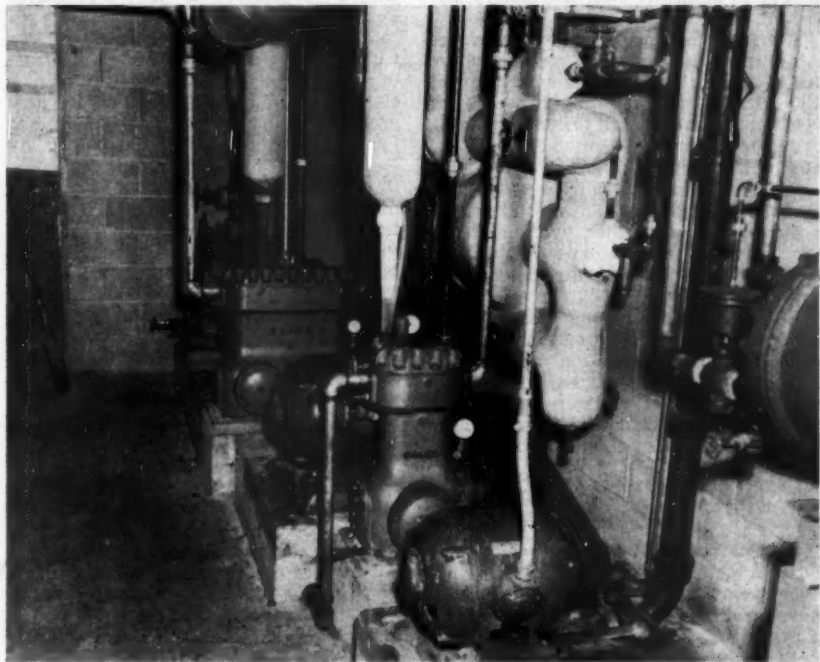
Foods served are carefully worked out in "multiples" to make it possible to offer standard high-quality where 200

pounds of chicken sandwich spread, for example, must be made instead of two servings. Extreme richness, and non-use of animal fats, plenty of butter, eggs, etc., have solved a lot of the freezing problems encountered.

The quick-freeze plant, installed by Baker Ice Machine Company, consists of a 10x8 pre-cooler room in which hot foods are brought down to 36 degrees, a vegetable cooler of the same size, a meat storage cooler, a storage room which can contain 10 tons of quick frozen foods at -10 degrees on steel racks, and the blast freezer itself. The latter, located nearest the kitchen, can freeze 300 pounds of airline foods per hour, on stainless steel carts which hold 9 trays each of soup, potatoes, stews, meats, baked goods, etc. Low temperatures in the coolers are provided by Krack & Fex circulating blowers, while U. S. Air Conditioning Corporation equipment is used in the storage room

and blast freezer. Refrigeration is supplied by 3 Baker ammonia compressor units, including a 2-stage arrangement with one high and one low stage compressor for the blast freezer, and a single compressor for the produce room, meat box, and the storage unit. Due to pre-cooling of all hot food items, plus the -50 temperature in the blast freezer, it has been possible to operate the storage and cooler rooms with a relatively light load, according to Mr. Henneforth.

After freezing and storage, foods are distributed to the 6 system kitchens in tar-impregnated shipping cartons, large enough to hold an average of 50 pounds, and refrigerated with dry ice. The shipments go out at the end of each week by TWA cargo liners in plenty of time to meet the next week's schedules. All are prepared by the system kitchens, who add bread, beverage, garnishings, etc., and are carried aboard the airliner in stainless steel casserole jugs.



These compressors power TWA's food freezing, pre-cooling and storage equipment. Rear two Baker compressors are high and low stage compressors for the -50 blast freezer, the other for pre-cooler, meat, produce and storage boxes.

Each item is packed according to how it will be "restored" for serving. Fruits are frozen in circular cartons, potatoes in trays, after which they are cut in blocks, wrapped in cellophane and given a wax paper overwrap. Stews, chicken a la king, etc., are frozen in aluminum foil trays, in which they are also pre-

heated for serving. Baked goods are simply wrapped in cellophane, over-wrapped with wax paper, and shipped for restoring at room temperature. Use of the separate containers makes it possible to restore each item separately—doing away with the "complete meal on the plate" idea altogether.

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## History of the Refrigeration Equipment Wholesalers Association

**T**HE history of man's progress always bears repeating and should become a matter of accurate record, to guide in the future, those who seek to elevate their positions in the world, with its ever-changing conditions. With this objective in mind, we offer the history and record of REWA.

Refrigeration Equipment Wholesalers Association is a strong, representative trade association with a membership of 180 wholesalers, operating in excess of 300 stores located in all principal trading areas throughout the United States, Canada and in many foreign countries. This association's membership in 1948 conservatively represents 85% of all refrigeration parts wholesalers who are eligible under the association's Constitution & By-laws to become associated with this organization.

REWA's voice is strong. Its opinions are respected. Its programs are accepted by the refrigeration industry. It is a worthy representative of an outstanding group of refrigeration wholesalers, competitors in our free economy of American business and the American way of life.

### Anniversary

On October 23, 1948 REWA celebrated its 13th birthday and proudly looks back over years of growth crowded with never ending new developments, during a period of rapidly changing conditions with many new problems, usually associated with the growth and expansion of a new industry.

The actual history of the organiza-

tion of the association was recorded in the Oct. 30, 1935 edition of Air Conditioning and Refrigeration News. This news medium not only recorded this event but were hosts to the small group of parts wholesalers who represent the charter members of the association. Forty refrigeration parts wholesalers responded to an invitation to meet in Detroit during an RSES Annual Meeting, to consider the formation of a trade association for the common good of this new group of businessmen. The original plans for this gathering were developed by four men prominent in our industry, three of whom have since gone to their final reward. These four men who fostered this activity were J. M. Oberc, President of J. M. Oberc, Inc., Detroit, Mich., a member of REWA, the late F. M. Cockrell, founder and publisher of Air Conditioning and Refrigeration News, the late Irving J. Knudson, General Sales Manager, Detroit Lubricator Co., Detroit, Mich. and the late J. S. Forbes, at that time Treasurer of Kerotest Mfg. Co., later President of Superior Valve & Fitting Co., Pittsburgh, Pa.

Invitations were sent out by these four men, to all known wholesalers and manufacturers of refrigeration parts and supplies, to come to Detroit during the RSES meeting to discuss the needs and advantages of organizing trade association groups in their respective trade levels. Mr. Cockrell of Air Conditioning & Refrigeration News also offered the two groups room facilities in their newspaper building for meeting purposes and later was host to a joint party held in the News offices. On Wednesday, Oct.

23rd, 1935, 40 refrigeration wholesalers sat in meeting in the offices of the News. In an adjoining room on the same day a group of 42 manufacturers of parts and supplies also met to consider the advisability of forming a trade association in their group. H. S. McCloud, at that time Manager of the Refrigeration Department of Williams & Co., Inc., Pittsburgh, acted as chairman of the Wholesalers meeting. J. M. Oberc acted as Secretary of the meeting.

Both groups voted to form trade associations at these meetings. Committees were appointed to draw up objectives of the association, the definition of a jobber (as wholesalers were called at that time) and also to draw up a Constitution & By-laws. It is interesting to note at this point that the wholesalers invited the newly formed manufacturers group to offer their version of a definition of a jobber. Before the final definition was approved by the wholesalers Committee a comparison of the definitions submitted by each group was made and were found to be surprisingly similar in most respects. The Committee on the Constitution & By-laws later presented a proposed draft of this document, which, after some discussion and a few changes, was adopted by the wholesalers assembled. This was followed by an election of officers and directors for the new association.

### The First Directors

The following men were elected to the first Board of Directors of the Association for the term of one year: W. C. Griesser — Refrigeration Equipment & Supply Co., Chicago; H. W. Small, Thermal Service Co., St. Paul; H. E. Adams, Lews Supply Co., Memphis.

Directors elected for 2 years were: J. M. Oberc, J. M. Oberc, Inc., Detroit; R. H. Spangler, The Spangler Co., St. Louis; H. W. Blythe, H. W. Blythe Co., Chicago.

Directors elected for 3 years: H. S. McCloud, Williams & Co., Pittsburgh; C. A. Kabat, Paramount Electrical Supply, New York; I. C. Alter, Harry Alter Co., Chicago.

Officers elected for the first year were: H. S. McCloud, President; C. A. Kabat, Vice-President; J. M. Oberc, Secretary and H. W. Blythe, Treasurer.

### Charter Members

Airo Supply Co., Chicago, Ill., W. J. Sorenson.

The Harry Alter Co., Chicago, Ill., I. C. Alter.

Atmospheric Control Co., Detroit, Geo. Nutting.

B-line Refrigeration Parts, Chicago, Stanley Harris.

Baumgardner Distr. Co., Toledo, C. W. Kamm.

E. J. Becker Co., Detroit, Andrew Koells.

H. W. Blythe Co., Chicago, H. W. Blythe.

Burststein-Applebee Co., Kansas City, M. W. Applebee.

Debes & Co., Cleveland, K. L. Debes.

Henry V. Dick & Co., Charlotte, N. C., Henry V. Dick.

W. C. DuComb Co., Inc., Detroit, W. C. DuComb.

Federal Refrigerator Co., New York, A. I. Brickner.

J. Geo. Fischer & Sons, Inc., Saginaw, Ray Fischer.

Forslund Pump & Machinery Co., Kansas City, Oliver Forslund.

Home Appliance Service Co., Greensboro, N. C., W. H. Parker.

J. J. Koepsell Co., Sheboygan, Wis., E. Anderson.

F. H. Langsenkamp Co., Indianapolis, F. S. Langsenkamp, Jr.

Lewis Supply Co., Memphis, H. E. Adams.

D. C. Lingo Co., Houston, Tex., D. C. Lingo.

Merkel Bros. Co., Cincinnati, O., H. W. Merkel.

Geo. Monjian Co., Chicago, Geo. Monjian.

J. M. Oberc, Inc., Detroit, J. M. Oberc. Paramount Electrical Supply Co., New York, C. A. Kabat.

C. L. Percival Co., Des Moines, Iowa, W. H. Percival.

R.S.D. Distributing Co., Richmond, Ind., M. F. Stutzman.

Refrigeration Economics Co., Canton, O. F. M. Bennett.

Refrigeration Equip. & Supply Co., Chicago, W. C. Griesser.

G. S. Robbins & Co., St. Louis, H. L. Dahm.

The Spangler Co., Inc., St. Louis, R. H. Spangler.



Standard Refrigeration Parts Co., Chicago, Herman Goldberg.

Carl Schneider Co., St. Louis, Carl Schneider.

Carl J. Stein Co., Chicago, Harry Drownes.

Superior Carbon Products Co., Cleveland, Geo. H. Hastings.

Thermal Service Co., Inc., St. Paul, H. W. Small.

R. E. Thompson Co., St. Louis, R. E. Thompson.

Universal Electric Products Co., Detroit, C. E. Johnson.

United Refrigerator Supply Co., Memphis, Boyd Evans.

W. M. Refrigeration Co., Milwaukee, G. D. Wang.

Williams & Co., Inc., Pittsburgh, H. S. McCloud.

Young Supply Co., Detroit, L. M. Young.

It is of interest to note that of the 40 original members only 16 are at the present time members of REWA. Five of the original members have branched into manufacturing, five are operating as wholesalers, but no longer retain membership in REWA, the remaining 14 have either discontinued their businesses or have branched out into other lines or trade classifications.

### Dual Activities

One of the important needs for the associations at that time was to, first: classify a jobber and his functions. Second, classify the various trade factors who were the jobber's customers. In the early days many companies were engaged in dual activities reaching into several definite functional classifications such as manufacturer-jobber, manufacturers agent—jobber, jobber-distributor, jobber-contractor, even some were jobber servicemen. It seemed apparent to everyone interested in studying this condition that definite trade levels must be established and adhered to. Therefore, much of the early work in the two organizations was to clarify the functional groups.

By checking over the list of original charter members you will find in the list borderline manufacturers, distributors, contractors, dealers and servicemen. Eventually all of these border line activities accepted the functional group

they preferred which in time clarified the situation.

The wholesalers association original name was National Refrigeration Supply Jobbers Assn. This name being continued in use until March, 1946 when the name was changed to Refrigeration Equipment Wholesalers Assn. (REWA). The association was originally incorporated under the laws of the State of Michigan. F. J. Gleason, now Vice-President of Copeland Refrigerator Co., was the first executive secretary with offices in The David Stott Bldg., Detroit, Mich. It is of interest to note that Mr. Gleason also served at this time as Executive Secretary for the newly formed manufacturers association which was originally called Refrigeration Supplies and Parts Manufacturers Association, but later changed to Refrigeration Equipment Manufacturers Assn. (REMA) the name used by them at the present time.

### Definition of a Wholesaler

The first definition of a jobber or wholesaler presented at the original meeting by the jobbers was as follows:

A jobber is a person or company who purchase merchandise (refrigeration) from at least five (5) manufacturers and resells same to servicemen, distributors, dealers, or the trade.

No jobber shall operate a service shop or organization, except for the trade, and no jobber shall do retail work.

The definition of a jobber offered to the wholesalers by the manufacturers was as follows:

The definition of a refrigeration supplies jobber, or wholesaler, hereinafter defined does not include the type of distributor who is recognized by some manufacturers as national or territorial sales agents. It is recommended, however, that these so-called sales-agents restrict their sales at wholesale prices to those concerns who conform to the following definition of a refrigeration supplies jobber. In the following definition, the term trade is defined as including the following:

1. Refrigeration Servicemen
2. Refrigeration dealers
3. Refrigeration distributors
4. Refrigeration wholesalers
5. Refrigeration contractors
6. Ice Cream manufacturers



The term refrigeration supplies jobber is defined to mean anyone performing the following functions hereinafter mentioned, and who does no retail service work for consumers, but may do service work for the trade on a wholesale basis. Provided, however, such jobber does not perform such wholesale functions merely to secure wholesale prices for the benefit of allied persons, firms or corporations.

A jobber should perform the following functions: 1. Purchase at wholesale prices at least five different essential products necessary to supply adequately the requirements of the trade. 2. Maintain and warehouse a stock of such products to supply adequately the requirements of the trade. 3. Distribute to the trade only a catalog either of his own or an aggregation of his manufacturers catalogs. In case of a catalog of his own, the manufacturer should have the privilege of editing those pages or parts of pages covering his particular product.

The final definition of a wholesaler included parts taken from both of the recommended versions.

### First R.E.M.A. Board

The original members of the Board of Directors of the Manufacturers Association were as follows:

J. D. Colyer, Wolverine Tube Co.  
C. M. Brown, Tecumseh Products Co.  
D. H. Daskal, Perfection Gear Co.  
J. S. Forbes, Kerotest Mfg. Co.  
H. V. Higley, Ansul Chemical Co.  
L. U. Larkin, Larkin Refrig. Corp.  
F. B. Riley, American Injector Co.  
K. B. Thorndike, Detroit Lubricator Co.  
F. O. Webster, Cutler-Hammer Co.  
Morrill Dunn, McCord Rad. & Mfg. Co.

The first president of the Manufacturers association was J. D. Colyer who served a two year term. J. S. Forbes was the first Vice-President, also the second President of the association.

### R.E.M.A. Charter Members

The manufacturers present representing the charter group of their association are as follows:

Alco Valve Co., St. Louis  
Allen Bradley Co., Milwaukee  
American Brass Co., Waterbury, Conn.  
American Injector Co., Detroit

Ansul Chemical Co., Marinette  
Automatic Products Co., Milwaukee  
Bridgeport Brass Co., Bridgeport, Conn.  
Bush Mfg. Co., Hartford, Conn.  
Commonwealth Brass Corp., Detroit  
E. R. Capewell Co., Philadelphia  
Cutler-Hammer, Inc., Milwaukee  
Dayton Rubber Mfg. Co., Dayton, O.  
R & H Chemical (DuPont) Wilmington, Del.

Electrimatic Corp., Chicago  
Ernst Co., Philadelphia  
Fedders Mfg. Co., Buffalo, N. Y.  
Federal Refrigerator Co., New York  
Frigidaire Corp., Dayton  
Henry Valve Co., Chicago  
Imperial Brass & Mfg. Co., Chicago  
Kerotest Mfg. Co., Pittsburgh  
Kold-Hold Mfg. Co., Lansing, Mich.  
Larkin Refrigerating Corp., Atlanta  
McCord Radiator & Mfg. Co., Detroit  
McQuay, Inc., Minneapolis  
Mayson Mfg. Co., Detroit  
Mueller Brass Co., Port Huron, Mich.  
Peerless Ice Mach. Co., Chicago  
Penn Electric Switch Co., Des Moines  
Perfection Gear Co., Harvey, Ill.  
Refrigeration Economics Co., Canton  
Spoehrer-Lange Co., St. Louis  
Square D Co., Detroit  
Steel Sales Corp., Chicago  
Tagliabue Mfg. Co., Brooklyn  
Temprite Products Corp., Detroit  
Trenton Auto Radiator Co., Trenton  
Victor Mfg. & Gasket Co., Chicago  
Virginia Smelting Co., W. Norfolk, Va.  
Wagner Electric Corp., St. Louis  
Wolverine Tube Co., Detroit

The second Annual Meeting of the two associations was held at Memphis, Tenn., also in connection with a meeting of RSES. Headquarters were at the Peabody Hotel. At this meeting R. H. Spangler was elected as the second President of the wholesalers. In 1937 Mr. Gleason resigned as Executive Secretary of the two associations. R. H. McClure of Chicago took over the secretaryship of the two associations. This moved the association offices from Detroit to Chicago. After this change was made, the original corporation was dissolved and a new corporation formed under the laws of Illinois. This corporation continues at the present time. In 1940 the two associations believed they should each be served by an individual secretary. N.R.S.J.A. then appointed Fred B. Hovey of Chicago, Secretary and

R.E.M.A. selected R. K. Hanson of Pittsburgh to act for their association.

Mr. Hovey acted as Secretary for the wholesalers through 1944 when H. S. McCloud became Executive Secretary and the association offices were moved from Chicago to Cincinnati, O., opening there Jan. 1, 1945.

### Past and Present Presidents

A complete list of Presidents of N.R.S.J.A. and REWA follow with the year in which they served.

1936—H. S. McCloud  
1937—R. H. Spangler  
1938—H. W. Merkel  
1939—L. H. Gorton  
1940—F. S. Langsenkamp, Jr.  
1941—C. E. Borden  
1942—A. H. Holcombe, Jr.  
1943—Harry Alter  
1944—H. W. Small  
1945—H. R. McCombs  
1946—T. I. Glou  
1947—G. J. Roche  
1948—H. G. Stern

There have been many problems and changes during the thirteen years covered by the associations' activities. The membership has grown steadily each year from 40 in 1936 to 180 in 1948. The association was well organized to meet the impact of the second world war and every member of REWA was helped by the organized activity conducted by the association in their behalf, during this trying period. As we travel further into the post war period with its inflation and many new and varied problems the association continues to work unceasingly for the benefit of all its members. Today REWA is looked upon by the entire refrigeration industry as the official spokesman for the refrigeration wholesalers. Each year new activities are added to REWA's program, thus broadening its services benefitting the entire membership as well as the industry as a whole. REWA will continue to forge ahead in the future with courage and confidence—its value to its membership measured to a great extent by the amount of effort given to the association by each of its members.

### Multiple Versus Unit Installations

THE refrigeration industry installed one large machine to refrigerate several fixtures for so many years that it is still being done in many installations even though most engineers know it is inefficient and more costly in the long run. Comparative costs over a period of years have shown a reduction of operating costs as much as 25 to 35% with unit installations over multiple.

Reasonably accurate control of humidity and temperature requires accurate balance of the system. Service, product, and heat leakage loads need to be closely balanced against evaporator and condensing unit sizes. With a multiple installation it is impossible to balance each fixture to maintain correct temperature and humidity.

As an example, here is the reason why. Consider a meat market with two display cases and a walk-in cooler. Monday morning the butcher loads up his cooler with a large stock of meat which has warmed up in transporting from packing plant to market and im-

poses quite a heavy load on the cooler. The machine runs continuously until this load is absorbed. The two cases need little or no refrigeration during this time, therefore the system is operating under the inefficient unbalanced condition of a large condensing unit on a relatively small evaporating surface.

Case number (1) is used for chops and steaks while case number (2) is loaded with roasts, offal and other goods. During the week case (1) gets most of the play but on Saturday case (2) receives the heavy service load and again the system is kept operating.

Service and product loads which are so often the greatest percentage of total load cannot be fixed. They vary from day to day and from fixture to fixture.

Original equipment costs of three machines are very little more than one machine. Installation costs are often less and operating costs are definitely less. Performance, however, is 100% better and as an added incentive to the purchase of three machines the customer has the assurance of never being confronted with a complete breakdown because it is unlikely that three machines could break down together.



Here is a view of the ribbon cutting ceremony, prior to the opening of the Boston educational exhibition. H. F. Hildreth, left, President of REMA, and C. C. E. Harris, Coordinator, right, are shown cutting the ribbon.

## N.E.S.A. Conference and Exhibits Emphasize "Education"

**Sponsored by RSES and REMA, Boston Conference Provides Factual Service and Installation Information for Men in the Field**

**D**ESIGNATED as the first Eastern Air Conditioning and Refrigeration Exhibit and Conference, sponsored jointly by The Refrigeration Service Engineers Society and The Refrigeration Equipment Manufacturers Association, 1500 service engineers, contractors and other industry personnel had the opportunity of securing factual down-to-earth information from the exhibits of 68 leading manufacturers in the industry, as well as the educational program which provided those attending the opportunity of hearing eminent authorities in their respective fields, discuss important service, installation and maintenance procedure.

The New England States Association of the RSES, with Boston Chapter acting as hosts, staged the event in the Bradford Hotel, October 8, 9 and 10. This was the second in a series jointly spon-

sored RSES-REMA educational exhibits, the first being held in San Francisco.

Service engineers had the opportunity of speaking directly with service and engineering personnel from the factories represented in the exhibits, and the true purpose of the exhibit, namely "How is it manufactured?", "How is it best used?" and "How is it serviced?" was carried out to the fullest advantage.

The local convention committees, under the capable direction of John J. Madden, Boston chapter, General Chairman (subsequently elected president of the New England States Association); with Lee Wallace, Elm City chapter, Assistant Chairman; Chas. C. E. Harris, Boston Chapter, Co-ordinator and Publicity Chairman; Arthur W. Andreen, Central Connecticut chapter, Arrangements Chairman, and Joseph A. McCue, Boston chapter, Chairman Housing Committee,

Simplify your service...

Improve Refrigeration

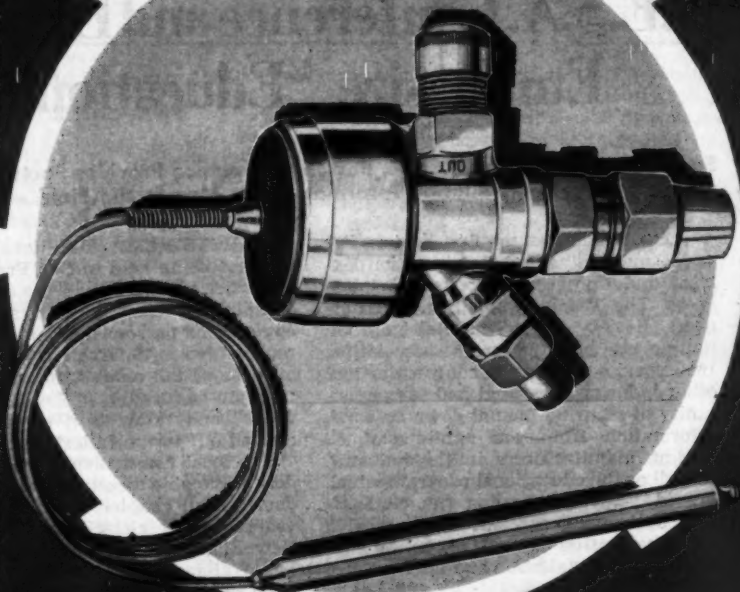
efficiency with

(hp) DEPENDABLE VALVE

Here's  
Valuable  
Overload  
Protection

FOR YOUR  
1/4 TO 1-TON SYSTEMS

Model 579 Adjustable Superheat  
Thermistor Expansion Valve with  
Safety Pressure Feature



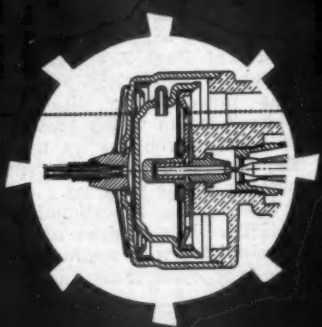
Pressure Limiting Model 222

Thermostatic Expansion Valves with  
Factory Pressure Features



# Pressure Limiting Model 212 THERMOSTATIC EXPANSION VALVES

Whenever meter installed is indicated on peak load or during pull down on any system you'll offer your customer money saving "performance bonus" by installing the pressure limiting Model 212 Thermostatic Expansion Valve. It will save excessive headloss.



In addition to the pressure limiting feature, the Model 212 has an exclusive and entirely new design for use with float operating lock-in pressure to a predetermined setting. It prevents pressure increase resulting in the discharge against the meter diaphragm, allowing for better meter life.

The correct condition has passed. Then the valve reverts to normal operation, controlling superheat through the thermodynamic bulb and meter diaphragm, with no loss of capacity and dependability.

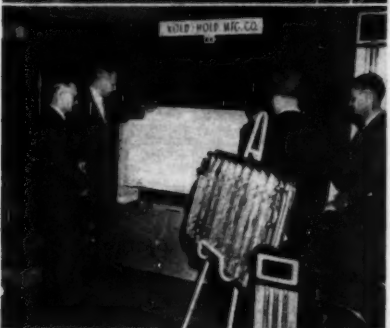
Model 212 also replaces any standard thermostatic expansion valve of 1/2 and 1/4 inch from 1/2 to thirty six inch and has the most adjustable superheat range of 10 equal degrees and can be set to give 20 or ambient temperature without affecting bulb capacity. It is available in four pressures of 15, 30, 45 and 60 lbs. from 1/2 inch to 36 inch, and Model 211 with float operating lock-in capacity, is also available. Your distributor stocks and sell them. Write for literature.

**AUTOMATIC PRODUCTS COMPANY**

2445 North Thirty Second Street • Milwaukee 10, Wisconsin  
Export Department, 100 North La Salle, New York 10, N. Y.

**DEPENDABLE** MIGRATION VALVES





had worked long and hard in arranging for this important Eastern Conference. The committee received the cooperation of the REMA Committee, consisting of H. F. Spoehrer, Chairman, and members J. M. Schlemmer, G. E. Graff, H. F. Hildreth and E. M. Flannery. Publicity was handled by George E. Mills.

Members of the Society were registered from Virginia, Maryland, Pennsylvania, New York and Canada.

### Opening Ceremonies

On Friday, October 8th, the exhibits were officially opened. President Joseph A. McCue, Boston Chapter, welcomed the delegates and introduced the participants in the ribbon cutting ceremony which included H. F. Hildreth, as President of REMA; Chas. C. E. Harris, First International Vice-president of RSES; Geo. Schuld, Cleveland, Ohio, representing NARC, and C. E. Borden representing REWA. All responded to the effect of the importance of these regional conferences in providing the opportunity of service engineers, contractors and others interested in the industry, to secure first-hand information on equipment they were selling and installing.

Following the usual regional conference, educational briefs were conducted simultaneously while the exhibits were open. These educational briefs provided lectures, movies and demonstrations by participating exhibitors.

### Saturday, October 9th

The educational sessions conducted by RSES were arranged under the supervision of Paul Reed, Educational Director of the Society, and each session was preceded by the "Information Please" forum which provided answers to service problems by the "Board of Experts" comprising the speakers appearing on the program.

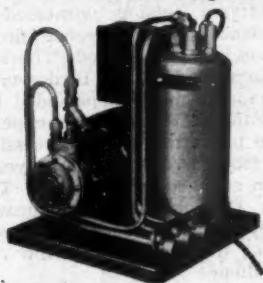
Opening the educational program, H. F. Hildreth, president of REMA, emphasized the wide application refrigeration is enjoying today and its future po-

Top to bottom in this column of photos are the displays of Bush Manufacturing Co., West Hartford, Conn.; Ansul Chemical Co., Marinette, Wis.; Kold Hold Mfg. Co., Lansing, Mich.; and Detroit Lubricator Co., Detroit, Mich.

5620 Glasses



## New TEMPRITE CARBONATOR achieves peak operating efficiency



MODEL CB-305 Temprite Packaged Carbonator is applied to existing cooling systems. Combination cooler-carbonator also available. Write for bulletins.

1. User gets up to 5620 glasses of highly carbonated water from a single tank of  $\text{CO}_2$  gas. This is equal to 281 glasses per pound of  $\text{CO}_2$  gas used.
2. No loss of  $\text{CO}_2$  gas through purging or venting.
3. Offers completely automatic carbonation for use in soda fountains, taverns, coin operated beverage dispensing machines, etc.
4. Operates independently of city water pressure.
5. Complete assembly, ready to install and mounted on a rigid steel base, includes pump and motor. Measures only 13" x 16". Fits in practically any location.
6. Stainless steel, long-life construction.

### TEMPRITE PRODUCTS CORP.

*Originators of Instantaneous*



*Liquid Cooling Devices*

45 PIQUETTE AVENUE

DETROIT 2, MICHIGAN



tential market. While he stated that these conferences were particularly designed to avoid any semblance of commercialism, he did warn that present conditions indicated changes in our business and many realized that the "sellers" market had definitely turned. Therefore it was necessary that business prepare itself for more rugged days ahead, and that it might be well to consider five important facts, especially if we are conducting our own business:

1. Are my people trained in the job they are doing?
2. Are we building good customer relations?
3. Am I keeping my customers advised of what I can do for them?
4. Are my stores and displays in good shape?
5. Is my store a friendly place to do business?

Following Mr. Hildreth, L. W. Larson, of Tecumseh Products Co., Tecumseh, Mich., discussed the subject of Servicing High Speed Compressors, while Dr. Walter O. Walker, Ansul Chemical Co., Marinette, Wisc., discussed the subject of Driers. Both of these talks were outstanding contributions to the educational program and were recorded for distribution at RSES Chapter meetings throughout the country.

The afternoon session witnessed a large attendance to hear Clarence Birdseye, who has been designated "The Father of Frozen Foods." Mr. Birdseye, in his usual capable manner, provided his audience with the result of his experience in the preparation and processing of frozen foods over the many years he has been engaged in this work. The interest in the question and answer forum following Mr. Birdseye's talk was indicative of the manner in which he held his audience.

### Sunday, October 10th

The educational program got off to a good start with the "Question and Answer" forum, the Board of Experts consisting of L. W. Larson and Dr. W. O.

Top to bottom on this page are views of the displays of Davison Chemical Corp., Baltimore, Md.; Remco, Inc., Zelienople, Pa.; General Controls Co., San Francisco, Calif.; and Virginia Smelting Co., West Norfolk, Va.

# DELAVAN

## PRECISION REPLACEMENT COMPRESSOR PARTS

*for*

### EASIER INSTALLATION BETTER PERFORMANCE

You can do a better job, easier with Delavan replacement parts for compressors. Each item in the complete Delavan line is precision-made to accurately duplicate the original dimensions and finish of the part it replaces. This extreme accuracy in every detail assures easier fitting and better performance.

New parts are being added to the Delavan line regularly. Check with your Delavan wholesaler for all types of compressor replacement parts.

PISTONS      PISTON PINS      DISCS  
CONNECTING RODS      ECCENTRICS  
VALVE PLATES      VALVE RINGS  
PISTON RINGS

**DELAVAN MANUFACTURING CO.**

3009 SIXTH AVENUE

DES MOINES 13, IOWA



The two photos above are overall views taken during the educational meetings of the Boston conference. They show the large attendance these meetings drew.

At left is an overall view of a portion of the exhibition hall.



Walker, with Paul Reed acting as moderator.

Following this feature, Geo. Schuld, Sr., chairman of the International Safety Committee, presented his talk on "How to Eliminate Hazards in Refrigeration." Mr. Schuld, in his usual interesting manner, related the activities of his committee in fostering the safety program the Society has adopted, and the spontaneous response which the chapters are according to this important work. Lack of time prevented him from





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*Keeps Coils Frost-Free  
Automatically  
at Any Temperature  
without*

LABOR  
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BRINE OR WATER SPRAYS

WRITE FOR BULLETIN R147

**KRAMER TRENTON CO. Trenton 5, N. J.**

SERVICE ENGINEER

71

November, 1948



relating many of the accidents which have recently occurred in the industry, but he pointedly discussed the steps that must be taken by every member, not only for the safety of the public, but individuals personal safety. He also outlined the program adopted by the Buckeye State Association in furthering the safety of its members, and it was his hope, as the international program progressed, that all chapters and state associations would adopt the same aggressive methods.

### **N.E.S.A. Holds Tube Bending Contest to Determine Champion**

For several months, preliminary arrangements had been made to determine the champion tube bender of the New England States Association. The big winner was to be determined at the N.E.S.A. meeting.

The tube bending contest was conducted by the Imperial Brass Mfg. Co. under the direction of T. A. Byrnes and Ray Burk, eastern representatives for the company.

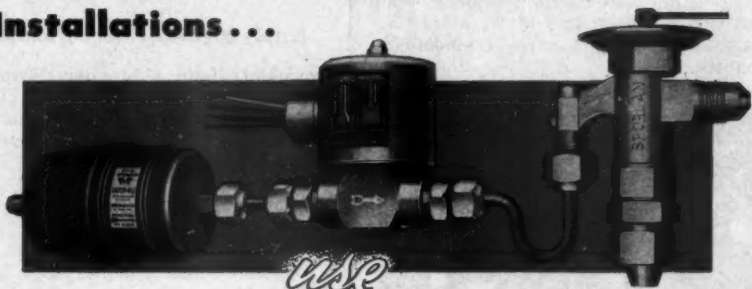
On Saturday evening, semi-finalists representing Boston, Worcester and Granite State Chapters met to determine the four winners to appear the following day in the finals. The successful contestants were: first, Irvin Gillingham, Granite State Chapter; second, James M. Stevenson, Worcester Chapter; third, E. L. Butler, Dirigo Chapter; fourth, J. O. Dance, Boston Chapter. J. A. Lindquist of Granite State Chapter, and A. G. Jakstis of Worcester Chapter, were the other contestants.

The finals conducted on Sunday afternoon created considerable attention, with a large throng present to encourage their favorite entry.

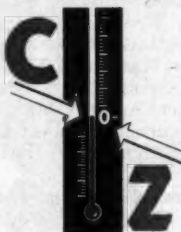
Officials conducting the final contest were Timekeeper B. Packtor, New Haven, Conn., Elm City Chapter; with Judges consisting of J. Hammill, Worcester, Mass., Worcester Chapter; Stanley Baldwin, Manchester, Conn., Central Connecticut Chapter, and Wm. Ralston, Providence, R. I., Providence Chapter.

Top to bottom in this group of photos are shown the educational displays of Automatic Products Co., Milwaukee, Wis., Kelvinator Corp., Detroit, Mich.; Kramer Trenton Co., Trenton, N. J.; and Mills Industries, Inc., Chicago, Ill.

*For Peak Performance*  
**on all Commercial Refrigeration**  
**Installations...**



**REMEMBER  
 THESE SYMBOLS**



when ordering  
**SPORLAN**  
**THERMOSTATIC EXPANSION**  
**VALVES**  
 from your wholesaler.

**SPORLAN "C" CHARGE**  
 for Suction Temperatures  
**ABOVE ZERO**

**SPORLAN "Z" CHARGE**  
 for Suction Temperatures  
**BELOW ZERO**

Only Sporlan offers you  
 Thermostatic Expansion  
 Valves with Selective Charges!

*use*  
**SPORLAN**  
*throughout!*

**SPORLAN Catch-Alls** The most perfect Filter-Dehydrator ever developed. It Cannot Powder! It Cannot Pack!

**SPORLAN Solenoid Valves**

**SPORLAN Thermostatic Expansion Valves**

The only Thermostatic Expansion Valves with Selective Charges!

When you buy Sporlan Products you can be sure that they are designed and built to give the best performance characteristics under all operating conditions... so

Use *Sporlan Throughout* on your very next job and see for yourself what Peak Performance really means.

FOR ALL SIZES AND TYPES OF  
 COMMERCIAL AND INDUSTRIAL REFRIGERATION APPLICATIONS

*Sporlan Manufactures*

SOLENOID VALVES • SOLENOID PILOT CONTROLS  
 MODULATING PILOT CONTROLS • REFRIGERANT DISTRIBUTORS  
 STRAINERS • CATCH-ALLS and the Only  
 THERMOSTATIC EXPANSION VALVES  
 with SELECTIVE CHARGES

You can install *Sporlan Products* with Confidence



The finalists consisted, in addition to the four semi-finalists of the preceding day, the following: J. E. Felix, Hartford, Conn., Central Connecticut Chapter; Rex F. Barnes, Mt. Carmel, Conn., Elm City Chapter; Les Harris, Marion, Conn., Elm City Chapter, and McW. Midyette, Waterford, Conn., Central Connecticut Chapter.



The Westinghouse Manufacturing Co. booth displaying cut-away model of their water cooler.

At the conclusion of the contest, the judges found it a difficult matter to determine the winners, and after due time the grand "champeen" of the NESA, together with runners-up, were announced. I. Gillingham was voted first prize, with second and third prizes going to J. Dance and J. Felix. Prizes consisted of a fifteen dollar cash award donated by the NESA, which was matched by an equal amount of merchandise by the Imperial Brass Mfg. Co.; second prize was a ten dollar cash award and an equal amount in merchandise, and third prize was five dollars and an equal amount in merchandise.

### N.E.S.A. Annual Meeting

Following the conclusion of the educational program, the New England States Association conducted their annual meeting. President Arthur Andreen presiding, requested the report of the treasurer and secretary, as well as brief reports from the various chapters comprising the NESA. Following this

business, the annual election of officers for the ensuing year was held, resulting in the following selections:

### N.E.S.A. 1948-1949 Officers

**President:** John J. Madden, Boston Chapter, Boston, Mass.  
**1st Vice-President:** Lee J. Wallace, Elm City Chapter, New Haven, Conn.  
**2nd Vice-President:** William H. Ralston, Providence Chapter, Providence, R. I.  
**3rd Vice-President:** W. E. Quimby, Western Mass. Chapter, Springfield, Mass.  
**4th Vice-President:** Earl Walter, Fairfield Chapter, Norwalk, Conn.  
**Secretary:** Chas. K. Hughes, Waterbury Chapter, Waterbury, Conn.  
**Treasurer:** Elliott Gordon, Granite State Chapter, Nashua, N. H.  
**Sergeant-at-Arms:** Ralph Wagg, Dirigo Chapter, Auburn, Me.  
**Educational Chairman:** Robert Davis, Worcester Chapter, Worcester, Mass.  
**Chairman, Board of Directors:** Louis St. Pierre, Berkshire County Chapter, Pittsfield, Mass.  
**Chairman, Publicity Committee:** Frank Folger, Whaling City Chapter, New Bedford, Me.  
**Chairman, Safety Committee:** J. Felix Hartford, Central Conn. Chapter, Hartford, Conn.  
**Board of Governors:** Wm. J. Tierney; Chas. C. E. Harris; Harold Lambert; Arthur Andreen.

### N.E.S.A. Annual Banquet

Climaxing the convention, the New England States Association held their annual banquet at three p.m. Sunday afternoon. Accommodations for the annual banquet had been sold out for several days previously, and the roof garden of the hotel in which the event was held, was packed to capacity. Nearly two hours of headliner entertainment served as a fitting climax to a most successful event.

# New 4-Scale SERVICEMAN

the all-purpose thermometer



for the regular run of work. Other scales in differentiating colors show equivalent pressures of Freon, sulphur dioxide, and methyl chloride. So you have here the all-round, all-purpose instrument.

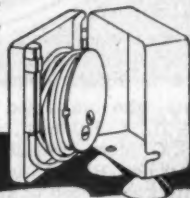
All the features that have made the "Serviceman" so popular have been retained and still more highly developed. This is reflected in the bright chromium bezel which makes an effective contrast with the satin-black finish of the case. Neatly concealed in the case when not in use, is five feet of sturdy tubing, slender enough to pass between the gasket and jamb of a closed refrigerator door. Movement is guaranteed accurate within one degree and has the famous Marsh "Re-calibrator" to keep it accurate. Suction cups prevent slipping on irregular surfaces and protect all finishes.

Down to the last detail this is a quality instrument—available at a moderate price that makes it a remarkable value. The serviceman is also available in standard scales and ranges, —30° F. to +65° F. and —10° F. to +100° F.

**JAS. P. MARSH CORPORATION**  
Dept. Q, Skokie, Illinois  
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# MARSH

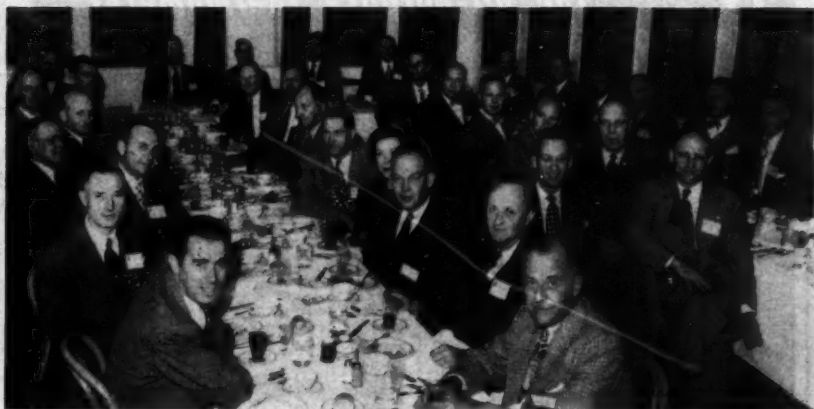
*Refrigeration Instruments*



BUY FROM YOUR WHOLESALE



# REMA-REWA Joint Meeting



View of the joint REMA-REWA luncheon held during their meeting in French Lick, Ind.

**A** THREE-day joint membership meeting of the Refrigeration Equipment Manufacturers Association and the Refrigeration Equipment Wholesalers Association, held at French Lick, Ind., on October 20, 21 and 22, proved very successful in obtaining closer relations between the two groups.

Meetings of the Boards of Directors of both REMA and REWA were held as well as product sections of REMA, Credit Section of REMA and an annual meeting of each organization.

Joint luncheon and dinner meetings of the Boards of Directors of REMA and REWA were held and proved an excellent way in which to discuss mutual problems.

High spot of the 3-day meeting was a joint banquet on October 21 preceded by a cocktail party.

W. Vernon Brumbaugh, new Executive Secretary of REWA, was formally introduced to REMA's membership.

Speakers who addressed the assembly were H. F. Hildreth, president of REMA; H. G. Stern, president of REWA; E. C. Marsden, REWA, who spoke on "Wholesalers are Faced with a Diminishing Profit Margin"; Benton Willner, Inland Steel Company, "What is the Steel Situation?"; H. W. Holt, REWA, "Future Trends in Refrigeration Wholesal-

ing"; and George S. Jones, Jr., Servel, Inc., who stressed the fact that "You've Got to Merchandise in '49".

The Refrigeration Equipment Wholesalers Association elected new officers for 1949 who will assume office effective as of January 1st. The new officers are: *President:* H. W. Holt, president, Orr, Inc., Pittsburgh, Pa.; *1st Vice-President:* Edward C. Marsden, president, Marsden & Wasserman, Inc., Hartford, Conn.; *Secretary:* J. P. Glass, partner, Chase Refrigeration Supply, Chicago; *Treasurer:* C. W. Eskridge, president, Henry V. Dick & Co., Inc., Charlotte, N. C.

A golf tournament between the manufacturers and wholesalers was held on October 21 with J. Kingsley Noel, Jr., of Victor Products Company proving himself the best golfer and walking off with the Bud Hanson golf trophy.

Winners of the fine array of golf prizes presented by Herman Goldberg as chairman of the golf committee were:

Low gross: J. K. Noel, Jr., 74; E. R. Pond 81; Ben Trevino 84; C. W. Dennis 85; F. J. Hood 85.

Low net: Howard Yost 70; Clark Bridgman 70; Art Bernthal 71; K. B. Thorndike 72.

Blind Bogey: Howard Jones 79; Joe Dugan 79; Phil O'Connell 79; P. Coleman 79; E. M. Billings 79; Whitey Holt 77; C. C. Crote 77.

# STANDARD *Stainless Steel* EVAPORATORS

*The Line of Quality*



MODEL No.	JS-25	JS-422	JS-35	JS-633	JS-45
Trays	1 Single 1 Double	2 Single 2 Double	1 Double 2 Single	4 Single 2 Double	3 Single 1 Double
Cubic Ft. Capacity	4 to 6	8 to 10	5 to 8	10 to 12	9 to 12

SOLD THROUGH LEADING REFRIGERATION WHOLESALERS

# STANDARD Refrigeration Co.

332 S. HOYNE AVE. CHICAGO 12, ILL.



## COMING CONVENTIONS

### Interprovincial Association

Place: Mt. Royal Hotel  
City: Montreal, Que., Canada  
Date: March 28 and 29, 1949  
Secretary: R. G. Henderson, 38  
Bedford Park Place, Toronto,  
Ont.

## Can This Record Be "Topped"?

**HAROLD LAMBERT**, secretary of Western Massachusetts Chapter, Springfield, Mass., is completing a record as a member of the Refrigeration Service Engineers Society, which may stand for some time to come.



HAROLD LAMBERT

One record that will be hard to equal is that Mr. Lambert has not missed a chapter meeting since the chapter was formed in 1938. He was elected to serve as its first secretary during that year.

During the ten year period he has served his chapter continuously as its secretary, with the exception of 1941 when he was a member of the chapter's Board of Directors.

In 1941, Mr. Lambert was elected 2nd vice-president of the newly formed Massachusetts State Association, which subsequently became the New England States Association. In December, 1944, Mr. Lambert was elected president of the Massachusetts Association. During his term as president, the Massachusetts Association was dissolved to broaden its scope of activities and form the N.E.S.A.

Is there any other chapter officer, or member, that can equal Mr. Lambert's continuous attendance record or service as an officer? The International office, as well as Mr. Lambert, would like to hear from any challenger.

★ ★ ★

## Fort Wayne Auxiliary Formed

THE wives of the Fort Wayne Chapter were invited to their meeting of September 22nd for the purpose of organizing an Auxiliary. After an enjoyable entertainment program, the twenty-five ladies present adjourned to another room to proceed with the formation meeting. Mrs. Jerrell Cassidy, former president of the Indianapolis Auxiliary, presided as Chairman. Election of temporary officers was held with the following results: Mrs. Austin A. Hill, *President*; Mrs. Art Hughes, *1st Vice-President*; Mrs. Charles Hill, *2nd Vice-President*; Mrs. Charles Batz, *Secretary*; Mrs. W. Coker, *Treasurer*; and Mrs. Norman Engelbrecht, *Sergeant-at-Arms*. Directors—Mrs. Otto Popp, Mrs. Max Gilligan, Mrs. Gene Nepper, Mrs. F. A. Shugart, Mrs. Ross Reganz.

A second meeting was held on October 13th at which time applications of 15 members were forwarded to the National Secretary, with the expectation that additional applications will be ready at the close of the third meeting. It is hoped that the Auxiliary can complete its registrations in time to have the charter presented during the Chicago convention.

★ ★ ★

## Third Auxiliary Formed In California

THE Monterey County Auxiliary at Salinas, California, has been formed and a charter granted on October 5th, making the third Auxiliary in the state of California. Officers elected to serve for the coming year are Mrs. LaVerne Thomas, *President*; Mrs. LaMyra Har-ruff, *Vice-President*; and Mrs. May Over-weser, *Secretary-Treasurer*.

**Your Equipment is  
NOT COMPLETE  
without . . . .**



## **THE MIDGET PURGER**

The Midget is the companion or sister product to the Little Giant Purger. The Little Giant, previously introduced, is for purging the larger units, but the Midget is a low cost, water cooled purger designed for economical operation for the smaller or fractional units up to 10 hp.

The Midget Purger provides positive and complete purging of the refrigerating system with minimum loss of refrigerant.

### **HERE ARE THE ADVANTAGES OF PURGING WITH THE MIDGET PURGER**

**THERE IS NO GUESSING**—By bleeding off the gases through the purge valve until the liquid rises to the top, you have a positive indication when purging is completed.

**MINIMUM REFRIGERANT LOSS**—The air in the system is completely separated from the refrigerant before the purge valve is opened.

**SIMPLE TO OPERATE**—All operating valves easily accessible. Not necessary to check pressures or temperatures. No need to shut down the system.

**POWER SAVINGS**—Power savings, due to a reduction in head pressure will pay for the "MIDGET PURGER" many times over.

**MANUAL OPERATION**—Fully manually operated, there is no possibility of a slow leak developing which would cause a loss of refrigerant before the trouble is located.

**ORDER THROUGH  
YOUR WHOLESALE**

**MUELLER BRASS CO.**  
PORT HURON, MICHIGAN

## First Indiana State Convention a Great Success

A NEW state association was officially welcomed into the International Refrigeration Service Engineers Society, during a three day convention held at Hotel Antlers in Indianapolis October 8, 9 and 10. The Hoosier State Association has been in formation for nearly a year but it was during their first annual convention that a Constitution and By-Laws was adopted and the charter presented by Floyd Lilley, International Director in the area.

About two hundred were in attendance at the meeting and the general opinion was that it was a most successful affair, particularly in view of the fact that this was the first convention within the state.

Visitors began gathering early Friday evening and about 9:00 p.m. the first meeting was called to order to hear a talk on heat pumps given by Orin Greenwood of General Engineering & Mfg. Co., St. Louis, Mo. Mr. Greenwood covered the construction and operation of the Gemco compressor and then discussed the heat pump manufactured by his company and some of the installations

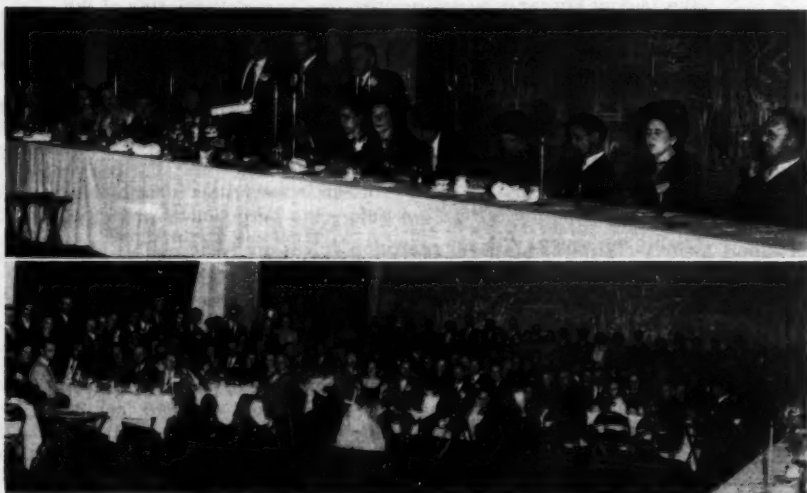
that had been made around the country. His talk created considerable interest as judged by the number of questions that came from the floor following its completion.

A Question and Answer session was next on the Friday evening program in which a Board of Experts answered questions on many subjects from the attendance. This session continued until nearly midnight, then refreshments were served in another part of the hotel. The Friday evening meeting was attended by approximately 50 and the total registration at that time was more than one hundred.

### Saturday Morning

Saturday morning the meeting got under way again with an Information Please session and with the same Board of Experts answering the questions. This was followed by a business session during which a Nominating Committee and Auditing Committee were appointed and instructed to report the next day. Secretary's and Treasurer's reports were also presented during this session.

The only speaker of the morning was John S. Mackinlay of the McCray Re-



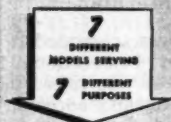
These two views taken during the annual banquet of the Indiana State Association, Oct. 9, show Floyd Lilley, standing center presenting the charter to past President T. Driskell. E. W. Wulf, newly elected President is standing at right. The lower photo is a view of those in attendance at the banquet.



# ACE Frozen Food Cabinets



HAVE EYE APPEAL



Tri-dimensional  
Frozen Food Open Top  
Wheel Away



Ice Cream Storage  
Cabinets



Sandwich Units and  
Toaster



Work Boards

Sliding glass  
Tri-dimensional  
Frozen Food Display  
Cabinets



## Eye Appeal CREATES SALES

... Ace cabinets with beautiful, brilliantly lighted "three-dimensional pictures in full natural color, have "EYE-APPEAL"... "EYE-APPEAL" that just naturally draws customers to the frozen food cabinets... "EYE-APPEAL" that creates immediate sales, because these new super-cabinets present frozen food in many different, attractive, and appetizing ways.

*"The newest clear-sision three-dimension that does not flicker, and may be viewed from any angle."*

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**CABINET CORP.**  
OF NEW BEDFORD, MASS.  
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manufacturers of

Ice Cream Dispensing Cabinets,  
Upright Ice Cream Storage Cab-  
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Frozen Food Display Cabinets,  
Creamer Soda Fountains, Subbells  
and Sandwich Units.



Creamer Units

Farm and Home  
Freezers



INCREASE YOUR BUSINESS WITH ACE TRI-DIMENSIONAL CABINETS!

frigerator Co., Kendallville, Ind. He spoke on the subject of "Open Self-Service Display Cases" which proved to be an interesting subject to the servicemen present.

A luncheon was held at noon for the visiting ladies and men and the address of welcome was given by the city safety director. During Saturday afternoon the ladies were taken on a bus tour of the city and a visit to the Indianapolis race track.

### Saturday Afternoon

An Information Please session opened the Saturday afternoon session which again proved lively and informative. The first speaker of the afternoon was H. M. Kelso of Tecumseh Products Company, speaking on the subject of "Hermetically Sealed Units." Mr. Kelso provided the members with a great deal of information on the growth and development of the hermetic unit and a general idea of what will be required of the service company who may in the future enter into the repair of these units.

Wm. R. Rinelli of Ansul Chemical Company, the next speaker on the program, talked on the uses of SO<sub>2</sub>, methyl and Freon in other industries, then continued with some very useful information on the formation of wax and sludge in refrigerating systems.

The Imperial Brass Mfg. Co., Chicago, sponsored and conducted a tube bending contest in which seven contestants competed for three prizes. The judges of the contest were Floyd Lilley, John S. MacKinlay and H. D. Busby. Winners of the contest were: Ted Dobrowski, first prize; Howard C. White, second prize; and John Leak, third prize. A cocktail hour occupied much of the time following the tube bending contest and before the annual banquet got under way.

### Banquet

The annual banquet was attended by nearly 200 members and their wives, and the presentation of the State Charter was made immediately after the dinner by Floyd Lilley, International Director. Five acts of an exceptionally good floor show provided entertainment after dinner and the balance of the evening was devoted to dancing.

The Sunday morning meeting, devoted

entirely to business, was highlighted with the two important functions of selecting a new slate of officers and of adopting a Constitution and By-Laws. New officers elected were: E. W. Wulf, Indianapolis, *President*; Norman Englebrech, Fort Wayne, *1st Vice-President*; M. Schwartzentraub, Hammond, *2nd Vice-President*; C. D. Powell, Evansville, *Secretary*; Earl Kinsey, Evansville, *Treasurer*; H. Williams, Terre Haute, *Sergeant-at-Arms*; and George Eager, Evansville, *Educational Director*.

### Sunday Morning

A talk on safety was scheduled to be given by Earl Yockey, International Director, but Mr. Yockey was called upon to help in the reading and adoption of the Constitution and By-Laws which took up considerable time and due to the lateness of the hour, Mr. Yockey suggested that his talk be postponed to some other date and was, therefore, dispensed with at this meeting. The Constitution was gone over section by section, changed to suit the membership, and finally adopted.

The Auditing Committee presented its report indicating that the Association had come out with a balance of approximately \$800.00 after the convention expenses were paid. Invitations for the next convention city were received and indications are that Indianapolis will be the site of the next annual meeting.

There were five exhibits of refrigeration equipment and supplies displayed by manufacturers and distributors.

★ ★ ★

### Third Joint Meeting of New Brunswick, Nova Scotia Chapters

THE third annual joint meeting of the New Brunswick and Nova Scotia Chapters was held at the Lord Nelson Hotel on October 2. A very interesting program was arranged.

At 2:00 p.m. a conducted trip was made to H. M. Dockyard where President F. Williams took charge of the party and explained the ins and outs. This trip will long be remembered as a most interesting one. At the same time the ladies were taken on a sight-seeing trip which they found very delightful. Following this moving pictures

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Analyze Hermetics without Guesswork

*Let Annie Do It!*

A HERMETIC UNIT ANALYZER which, in a matter of seconds, will positively indicate the nature of any electrical defect.

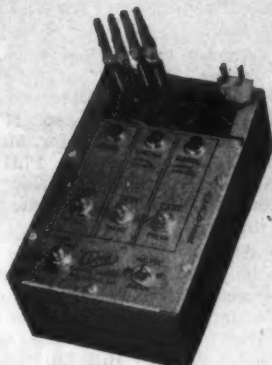
USED BY U.S. ARMED FORCES  
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*Annie*

REVERSES DIRECTION OF RUN  
PROVIDES MANUAL STARTING  
INDICATES OPEN OR GROUNDED FIELDS  
RELEASES STUCK OR FROZEN UNITS—

stuck units can frequently be freed by reversing the running direction.

ACCURATE—you can estimate closely without fear of having to take a loss. A "must" in any repair kit. Don't be embarrassed by your customer asking: "how do you know?"



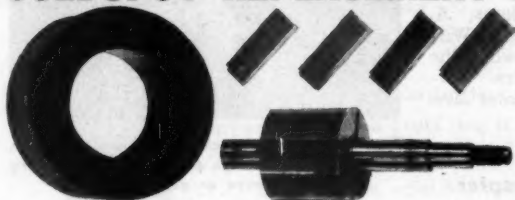
## SPECIFICATIONS

Size: 3" x 5" x 8"

Weight: 1 3/4 pounds

Price: **\$16.50**

## COLDSPOT REPLACEMENT PARTS



For All Compressors  
Having 15/32 Shafts

Matched  
Set, Each. **\$14.50**

Lots of 3,  
Each..... **\$13.80**

### QUIET COLDSPOT CARBON VANES

Available in 3 Sizes—1"-1 1/4"-1 1/2"  
Each Set..... **\$1.25**  
Lots of 10 Sets..... **\$1.19**  
Lots of 25 Sets..... **\$1.13**

### Coldspot Check Valve

Stainless Steel Seat; Swedish  
Steel Disc; No Tools Necessary  
to Install in 5 Minutes

Each ..... **\$2.25**  
Lots of 10..... **\$2.00**



### BELLOWS SEAL

Each ..... **\$3.00**  
Lots of 10..... **\$2.85**

Coldspot  
Drive Couplings  
&  
Dome Gaskets

## MECHANICAL REFRIGERATION ENTERPRISES

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were shown, then refreshments served. Next a balloon blowing contest got under way. Bill Rowe did the most blowing so got the prize—a Prest-O-Lite leak detector.

Among the visitors were E. G. McCracken, President of I.P.A., B. Graydon of the Robert Elder Co., Al Pike of Universal, Mr. Denton of Frigidaire, Mr. Beach of Kelvinator, Mr. Thompson of Creamery Package, Phil Palmer, T. Andow, President of New Brunswick Chapter, Fred LaFlamme and many others.

At 7:00 p.m. dinner was served and after the usual introductions and speeches were taken care of, President Williams proposed the toast to the King. Prizes were passed out and pictures taken. At 9:00 Bill Elliotte and his all girl orchestra started to play, and at 10:30 Miss Canada arrived and sang four numbers and also drew tickets for some more prizes. The prizes were donated by several companies, helping to make the meeting the success it was.

The committee consisted of L. Foster, Chairman, President F. Williams, A. Myers, M. Dickie, E. A. Howitt, G. Wilson, B. Martell and C. Tredwell. The ladies committee included Mrs. Williams, Mrs. Myers, Mrs. Dickie and Mrs. Rowe.

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### San Fernando Valley Chapter Receives Charter

ON OCTOBER 5th the San Fernando Valley Chapter was presented with its charter before a fine group of chapter members as well as many visitors from other chapters. International Treasurer M. R. Hanks, who presented the charter, was ably assisted by Bill Allison, who gave the oath of obligation, and Pat Riley who presented the membership certificates. Too much credit cannot be given to President Chas. S. Rush for his hard work and unfailing enthusiasm. His efforts, with the cooperation and help of the California Association, resulted in the formation of the San Fernando Valley Chapter.

Other chapter officers are: Geo. Fredrickson, 1st Vice-President; Geo. T. Bylard, 2nd Vice-President; A. Goodman, Secretary; F. W. Pelton, Treasurer; K. C. Moore, Sergeant-at-Arms; and

James W. Frantz, Educational Director. Board of Directors—C. R. Hall, C. B. Taylor, J. W. Frantz, John Schlemmer and Jesse J. King.

★ ★ ★

### Guardians of the Treasury

PLAGUED with the sudden ideas and resulting motions from the floor of meetings which meant spending the association's money even when they could not afford it, the Illinois State Association some time ago appointed a finance committee with the provision that no moneys over \$50.00 could be spent without the approval of the committee.



The Illinois State Association finance committee take time out from the annual meeting recently to approve an expenditure.

Photo by Irving Alter

In their recent annual meeting a motion was made that the Secretary be paid \$100.00 as a token of appreciation of his work. The motion was passed and to settle matters immediately, the committee went into a huddle at the back of the room and approved the expenditure.

It is not always that the committee acts so promptly at attested by the name under which the committee's chairman and association's treasurer, Ralph "Scot" Porter is now known. However, this expenditure met with such unanimous approval that the committee obliged by quick action.

We think this is another example of how a good democratic organization works and we think it offers a suggestion to all chapters plagued with the reckless spending of chapter funds.

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- Precision Engineered
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All brass-copper construction for long life. Inlet screen bound with brass ring is 50 x 40 mesh brass. Outlet is 100 mesh monel screen plus a pure white wool felt disc of refrigeration quality which acts as a highly effective strainer. Filled with dust-free refrigeration grade Silica Gel. For the best, buy Electromatic!

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## CHAPTER NOTES

● **ALTOONA CHAPTER, Altoona, Pa., Oct. 6**—After the business meeting a brief intermission was held during which time refreshments were served. After intermission the meeting was turned over to G. C. MacAlarney, Chairman of the Educational Committee, who introduced the speaker of the evening, Joseph Lothschuetz, field representative for the Cornelius Corporation. Mr. Lothschuetz's subject was "Draft Beer Dispensing Systems." He outlined the several basic types of systems, then explained the component parts of these applications, temperatures and pressures and their effects on foaming, air compressor design and application and other factors.

● **ATLANTA CHAPTER, Atlanta, Ga., Oct. 15**—Newly elected officers for the 1948-49 year are as follows: F. H. Smith, President; Dave H. Lowe, 1st Vice President; Carl D. Johns, 2nd Vice President; John W. Parker, Jr., Secretary; Thos. L. Carnell, Treasurer; J. W. Blackwell, Sergeant-at-Arms; and Thos. L. Hart, Educational Chairman. Directors—Clyde H. Bishop, T. L. Carnell, V. P. Groves and T. H. Hart. It was decided to set the third Friday in each month as regular meeting nights at 7 p.m. at the Y.M.C.A. Dinners are to be served for those wishing it. Plans for a Christmas party to be held on December 22nd are being made. Austin Brown had as his guest, David Ralston, sales manager of Grand Rapids Brass Co.

● **ARROWHEAD CHAPTER, Riverside, Calif., Oct. 11**—The meeting was preceded by a round-table discussion on refrigeration problems which was attended with great interest. Charles Edwards was chosen as delegate to the Chicago convention in November, with M. R. Hanks as alternate. Pete Askew of Thermal Products provided the educational program. He displayed several "Re-Cold" H<sub>2</sub>O defrost coils and gave a discussion on the proper use, maintenance and servicing of water defrost low temperature coils. Refreshments of chili-beans, coffee and cup cakes were served by the wives of the entertainment committee, Mrs. Frank Parker and Mrs. Wm. Bird. A nice crowd of 36 members and 18 visitors attended the meeting.

● **AZALEA CITY CHAPTER, Mobile, Ala., Sept. 15**—J. P. Bowen representing Penn Electric Switch Company was the first speaker on the educational program. He gave a review on the design, construction and application of several types of Penn controls, and discussed in detail the No. 270 series pressure type controls, describing the many advantages, characteristics, installation and service of these controls. He also briefly discussed water and solenoid valves. This was followed by a talk by Paul H. Wolfe of the Revere Copper and Brass Company, who spoke about the new standard gauge of copper tubing and also discussed in general the

process of manufacturing copper tube and fittings, answering questions from the audience pertaining to the bending of copper tubing and the installation and service of such tubing. The President next passed around to the members a hand valve with which he had experienced trouble, explaining the cause and the correct remedy for this trouble. He also passed around a cut-away sample of a Packless hand valve, strainer and drier, pointing out that these cut-away samples represented typical construction of many valves and accessories, and clearly showed what was on the inside of such fittings.

● **BERKSHIRE COUNTY CHAPTER, Pittsfield, Mass., Sept. 23**—After the regular business meeting, Frank Meyers of Payson & Company introduced John Campbell of Cecil Bowling, who gave an interesting talk on Heat-X-Changers which was enlightening to all present.

● **BIRMINGHAM CHAPTER, Birmingham, Ala., Sept. 1**—Three new members were admitted by ballot, namely, John Draper, Birmingham (active); Reedy Armstrong, Decatur (active); and M. B. King, Birmingham (junior). Mr. Duke of Bussmann Fuse Mfg. Co. gave a very practical and interesting demonstration of fuses and fusetrans. His demonstration was well received and enjoyed by the audience.

● **BLACKHAWK CHAPTER, Burlington, Ia., Oct. 4**—It was decided to give a door prize, not to exceed \$2.00, at each future meeting. John Kerby was appointed delegate to the International Convention and Elwood Anderson was appointed alternate. Howard Hemerling suggested that talks by some of the older members might benefit younger members with their refrigeration problems. This was approved by all. Educational Chairman Elwood Anderson introduced the speaker, Ben Burke of Lynch Corp., who showed slides of the Lynch factories and assembly methods.

● **CANTON REGIONAL CHAPTER, Canton, Ohio, Aug. 15**—The chapter's first annual picnic was held on this date with about twenty members and their families present. Games were played and prizes were awarded to the winners. A basket supper followed.

● The September meeting was a stag beer party held at Homer Essigs place. Cards were played and hamburgers and beer served. About 38 members and 32 guests enjoyed the affair.

● **CHARLESTON CHAPTER, Charleston, S. C., Sept. 15**—Upon the completion of chapter business, Mr. Moody presented a movie entitled "Removing and Installing a Compressor or a Condenser" as the educational portion.

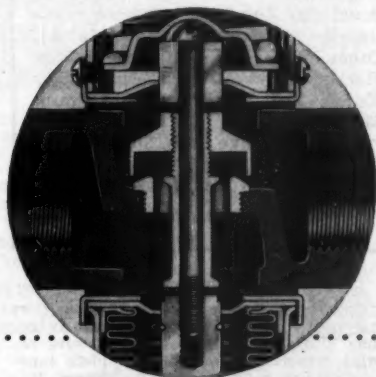
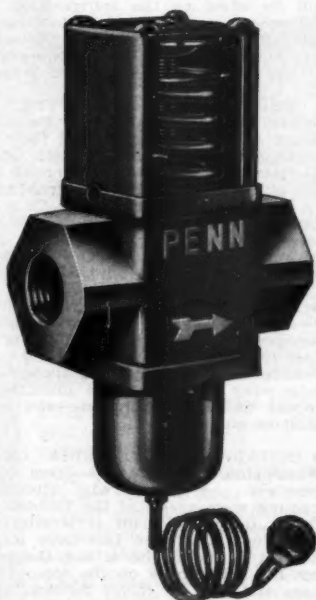
At the October 6th meeting, one member of the Board of Directors was elected, and after nominations were in and a ballot cast, Jack Petit was chosen by a majority vote. A lively round table discussion of various refrigeration problems was held before adjournment.

# **SWITCH TO FOR DEPENDABLE WATER VALVES**

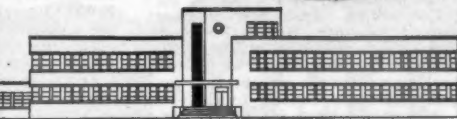
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## Wausau Chapter Being Formed

**I**N A SECOND formative meeting of a group of men in Wausau, Wisconsin, the meeting was called to order by Bill Day, temporary president, and as there were quite a few present who were not at the first meeting, he explained again the object and purpose of the Society. There were about twenty-five servicemen present who signed the charter. A general discussion was held on the organizing of the Wausau chapter.

Mr. Plansky of Central Refrigeration was then called upon and explained further what could be done by cooperation and the holding of monthly meetings. Mr. Breitenstein of Central Refrigeration also gave an interesting talk on what cooperation could do and what it would mean to have a good state code.

The business of electing temporary officers was then taken up and nominations were called for President. R. W. Plansky of Central Refrigeration and Herb Fuller of American Refrigeration were nominated. Mr. Plansky was elected. Other officers elected were: Elroy Horak, 1st Vice-President; Elmer Kuehl, 2nd Vice-President; Frank Malek, Treasurer; Jack Coates, Secretary; and Dave Stav, Sergeant-at-Arms. It was decided that these officers would be installed at the next meeting.

● **CHICAGO CHAPTER**, Chicago, Ill., Oct. 12—The newly elected State Educational Director, Willis Stafford, presented a wire recording transcription of the complete business meetings conducted at the recent Illinois State Convention. Four new members were welcomed by John Heger, President. Another interesting discussion resulted from Ed Riccio's paper on the Safety Committee, further impressing upon the membership several unusual accidents caused by careless handling of refrigerating machinery and tools. George Wilson provided the educational feature, presenting a sound film on electrical circuits and controls used in domestic refrigerators. In addition, Mr. Wilson gave a talk on Airserco testing equipment.

● **COLUMBUS CHAPTER**, Columbus, Ohio, Sept. 8—Mr. Dunlop of Ranco, who had been absent from meetings due to illness, was welcomed back and everyone was glad to see him. Jack Croushore was introduced to the members. The speaker for the evening was unable to appear so in his place, Earl Yockey led a discussion dealing with service problems that everyone has had and the way the problems have been corrected.

● **COMPTON HUB CHAPTER**, Compton, Calif., Sept. 15—Four petitions for membership were read and referred to the examining committee. Visitors for the evening included Leon Smith of Long Beach, Howard E. Wilson of Pasadena, Larry Ostrander of Long Beach, Leonard Fox of Maywood, Les Scott of South Gate, and Harold Halls of Los Angeles. Mr. Halls is from Refrigeration Service, Inc., and provided the educational program with a school type of lecture on moisture, its content in refrigerants and its effect on the refrigeration system. He had the members and visitors take down data and copy charts, which proved to be very interesting. Refreshments were served by Mrs. Brown assisted by Mrs. Wilson.

● **CORPUS CHRISTI CHAPTER**, Corpus Christi, Texas, Oct. 12 — Ballots were passed and the count showed that Wallace Lindeman was elected delegate and Carl Pumphrey alternate to the annual convention in Chicago. A lecture, furnished by E. B. Parsons of Straus Frank Co., entitled "Stability of Refrigeration Systems" was shown on a machine furnished by P. Murray and run by C. A. Broome. Twenty members and two visitors enjoyed this meeting.

● **DAYTON CHAPTER**, Dayton, Ohio, Oct. 14—John Becker led a short discussion on service problems, after which he introduced Carl Howenstine, Buckeye State Association President. Mr. Howenstine showed a very interesting picture on the manufacture of copper tubing by Wolverine—also a couple of sport pictures.

● **DISTRICT OF COLUMBIA CHAPTER**, Washington, D. C., Sept. 9—More than fifty members and guests who attended this meeting were guests of the District Oxygen Co. in their new plant at Hyattsville, Md. Educational Chairman Lou Levy introduced Howard R. Montaigne of the District Oxygen Co., who spoke on the topic "Applications and Uses of Silver Solders." He also demonstrated several of his company's products. Two door prizes, a sample kit of silver solders and a fire-extinguisher-tire-inflator, were won by two guests from the Naval Research Laboratory. These prizes were donated by the District Oxygen Co. as were also the excellent refreshments which followed the meeting.

At the October 14th meeting, C. W. Phillips was elected delegate to the convention in Chicago. Eight junior members, all graduating members of a recent Naval Research Laboratory apprenticeship program, were presented full membership certificates. They are: L. Addelman, R. Davey, J. Columbus, J. Powers, B. Sanders, L. Manning and R. Steiner. These men were all charter

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**E-Z-SEE**  
 LEAKPROOF  
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IT'S E-Z TO SEE THROUGH the tubular high pressure Pyrex gauge glass. Magnifies when filled with liquid to afford far better than normal vision.

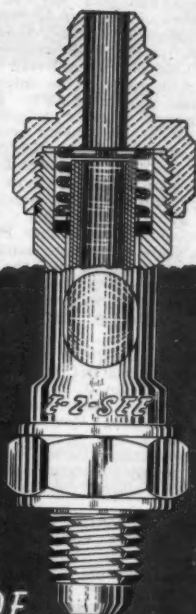
CAN'T LEAK BECAUSE the springs maintain just the right amount of force upon the neoprene gaskets, form a positive seal around the glass to compensate for "cold flowing." Refrigerant pressure on gaskets assists springs to make an even tighter seal. The higher the pressure, the tighter the seal.

SAFE BECAUSE glass is protected by unique slotting arrangement in the rugged brass body. Glass actually "floats" in spring compensated neoprene gaskets thus withstands pressures up to 500 P.S.I. with perfect safety.

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members (as junior) of the chapter. On hand to witness the presentation were several distinguished members of the Naval Research Laboratory. Herbert Hoover of the Kold-Hold Mfg. Co. gave an excellent talk on the application and installation of his company's cold plates. A lively question and answer period denoted the interest held by his fine, slide-illustrated talk. Eighty members and guests were in attendance at this meeting—two of the guests being President B. A. Haucks of the Virginia Chapter and Mr. Johnson of the Electricmatic Corp. The door prize—an Imperial tube flaring set donated by Refrigeration Supply Co., Inc., was won by C. W. Phillips. (It was generally conceded that member Phillips had a fairly profitable meeting inasmuch as he was elected delegate to the convention, given \$75.00 to go on, and in addition won the door prize.) Refreshments followed this unusually interesting meeting.

• **FAIRFIELD COUNTY CHAPTER, Fairfield County, Conn., Oct. 11**—During the business meeting, John J. Madden was elected delegate and Lee Wallace was chosen alternate to the National Convention in Chicago. The educational feature was a film and discussion by Arthur Javes of the Sporian Valve Co., on the operation and construction of the Sporian valve.

• **FOX RIVER VALLEY CHAPTER, Fond du Lac, Wis., Oct. 6**—William John Lyness was voted into the chapter as an associate member. A delegate and alternate to the National Convention were chosen—namely, Fred Hansen and Ernest Mueller, respectively. Ardon Abraham announced plans for a tube bending contest, sponsored by Imperial Brass Co. to be held at the November meeting. Joe Paige of the Detroit Lubricator Co. gave a very instructive talk on their valves and other products, following which refreshments were served.

• **GARDEN STATE CHAPTER, Newark, N. J., Oct. 21**—This meeting enjoyed the large attendance of 75 members and guests. George Grandin, Chairman of the Safety Committee gave an interesting report on his conversations with International Safety Chairman at the Boston conference. The Nominating Committee presented their slate for 1949 officers. Several other committee chairmen submitted reports, after which President Al Manning appointed Whit Freeman as delegate to the International Convention in November. In the absence of Vice-President Epstein, Whit Freeman introduced Paul Domke of Mueller Brass Co., who gave an interesting talk on soldering—with an actual demonstration of the way it should be done. Two door prizes donated by Abe Gruger & Co., Elizabeth, N. J., were won by Herb Glass and Paul Kloman. Coffee and doughnuts were served after adjournment.

• **GOLDEN GATE CHAPTER, San Francisco, Calif., Sept. 28**—The educational program was a demonstration of the Pan Electric Automatic Ice Cube Maker, given by Paul Engler. It consisted of the complete working unit. A raffle was held for a pocket

thermometer and the lucky ticket was held by Eugene Larsen. Refreshments of coffee and cake were served.

• **GRANITE STATE CHAPTER, Manchester, N. H., Oct. 11**—President Hall gave an informal report on the N.E.S.A. convention in Boston, in which he brought out facts about the safety meeting and gave a few illustrative examples of bad accidents. Considerable discussion about the delegate to the Chicago convention resulted in the appointment of President Hall as delegate and Frank Zaleski as alternate. President Hall then turned the meeting over to Harry Cobe, Chairman of the Educational Committee, who presented Sidney Shapiro and Robert Brown of Tenney Engineering, Inc. They demonstrated and explained the Tenney thermostatic expansion valve and the Tenney Defrostalator which was thoroughly enjoyed by the 26 members present.

• **GREENSBURG CHAPTER, Greensburg, Pa., Sept. 13**—Guest speakers for the evening were Messrs. Newcum and Smith of Remco, Inc., of Zellenople, Pa. They gave a highly interesting lecture on dehydration in condensing units, emphasizing the importance of temperatures which are the influencing factor in determining the full capacity of a dehydrator. Many helpful hints were given during the open question forum.

At the October 4th meeting, C. E. Springer and Arthur Patton were admitted to membership by unanimous approval. A. L. Milazzo was requested to contact the ice cream and dairy companies in Johnstown for the purpose of sounding out their feelings as to what they believe should be done in order to eliminate the free refrigeration service that is now being given by them to their customers. Ted Eisaman was elected delegate to the International Convention, with Bob Miller alternate. Emmet C. Williams from Airserco Mfg. Co., in Pittsburgh, provided the educational program—a very good talk on hermetically sealed unit.

• **HEAD OF THE LAKES CHAPTER, Duluth, Minn., Oct. 12**—John Markkula and Joseph A. Schlick were voted upon and accepted into the chapter as active members. It was moved and seconded that at future meetings a door prize be given away. Bob Rooney told the members about a little experience he had with a moisture magnet, which was very interesting.

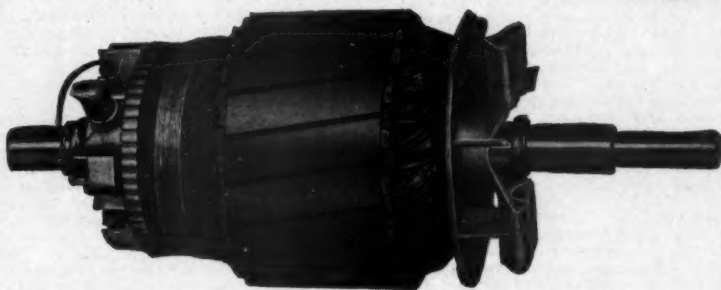
• **ILLINI CHAPTER, Champaign, Ill.**—The chapter held its annual election of officers several months ago with the following results: D. L. Dunlap, President; A. E. Mercer, Vice-President; M. W. Rigdon, Secretary-Treasurer; and R. H. Johnson, Educational and Program Director. Board of Directors—C. L. Rogers, Glen Grindley and Paul Rector.

The September 1st meeting was held at the home of M. W. Rigdon. Roscoe E. Brigham made application for membership, was accepted and took the oath, which was administered by Vice-President Mercer. R. H. Johnson and C. L. Rogers announced their intentions of attending the International Convention and offered to represent the chap-



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ter as delegates. The meeting was then turned over to R. H. Johnson who gave a recording and illustrated slide projection of a report by Dr. Walker of Ansul Chemical Co. entitled "Solids in Refrigerants." A Dutch lunch was served and enjoyed by all.

• **KANKAKEE VALLEY CHAPTER, Kankakee, Ill., Oct. 5**—Wayne Purvis was voted delegate to represent the chapter at the International Convention, with Franklin Dupuis as alternate. Through some misunderstanding, the educational program planned for the evening could not take place, so as a substitute, Gene Kirkland from Engineering Specialty Co. of Gary gave an educational talk on air conditioning and evaporative condensers.

• **LITTLE EGYPT CHAPTER, Benton, Ill., Oct. 6**—This meeting took place at the K & S Appliance & Equipment Co. in West Frankfort, Ill. A motion was made and seconded that the president be made the delegate to the International Convention and that the secretary be his alternate. The guest speaker was Mr. Williams, a representative of the Bussman Mfg. Co., who gave a very interesting talk and demonstration on fuses and their applications. The Authorized Refrigeration Parts Co. of St. Louis sponsored this meeting and likewise furnished the refreshments that were served after it.

• **LONG BEACH CHAPTER, Long Beach, Calif., Oct. 13**—There were forty members and eighteen visitors present at this meeting. The educational round table discussion was called to order by Educational Chairman Tom Renzi who introduced Chuck Chidester of Remco, Inc., Keith Wilson of Weber Showcase, and member Henry Howard as the "experts." Other visitors introduced during the course of the meeting included E. L. Gilmore, president, C. E. Olbright and W. O. Farquahr of the Arrowhead Chapter; President Charles Rush of San Fernando Valley Chapter; Maurice Juneau and Lloyd Cook of Pomona Chapter; C. W. Patten of Hub Chapter; Max Haley, Tom Gatterman, J. O. Plesich, C. V. Vaught, George McCowan, C. Marinoff, Steve Perino and Paul J. Donovan of the California Bank. Welfare Chairman Fred Riley presented Mrs. Mary Perino, her son and her dog. Mrs. Perino and her son thanked the members for their part in securing the seeing eye dog for her; her son adding his thanks to those of his blind mother. Paul J. Donovan of the California Bank gave a very timely talk on "Credit and the New Regulation W." The popularity of the topic and the speaker was proven by the barrage of questions asked and answered for more than an hour after the talk. A raffle was held with prizes going to Troy Langwell, Maurice Juneau and Paul Travers. Eats were served by Joe Mura and Jack Smith.

• **MEDINA CHAPTER, Medina, Ohio, October**—It was decided to hold a large educational and Christmas party in the middle of December to promote a membership drive, with a prize to the man bringing in the most new members. No educational program was reported.

• **MIAMI CHAPTER, Miami, Fla., October**—The meeting was immediately turned over to Educational Chairman Dolard who introduced Sigfried Rosenweiz from the Korfund Co., Inc., of Long Island City, N.Y. Mr. Rosenweiz gave an outstanding lecture on Vibration Control, while "Pat" Kelley of Ralph "Pat" Kelley & Associates of Miami, Fla., assisted him with slides. Mr. Rosenweiz explained each slide and how vibration was controlled by various kinds, styles and shaped isolation gadgets, their duties and how installations were made. Pictures were shown of bases and equipment from a few pounds to one or two million tons—the large one for cutting gears thirty feet in diameter. Questions were asked after the lecture and all answers were very concise and to the point so all could understand the meaning very clearly. Refreshments wound up the meeting.

• **MONTEREY COUNTY CHAPTER, Monterey, Calif., Oct. 13**—The meeting was preceded by a potluck dinner sponsored by the newly formed Ladies Auxiliary. Lloyd Thomas, President of the California Assn., and also a member of this chapter, gave an interesting talk on the educational programs now being set up by the State Association and International Association. He pointed out the numerous opportunities and helpful knowledge to be gained by being an active member. At the conclusion of the meeting refreshments were again served by the ladies.

• **MONTGOMERY CHAPTER, Montgomery, Ala., Oct. 1**—During the business meeting, J. M. Manley was elected delegate and F. G. Ratliff alternate to the convention in November. The educational speaker was Harry G. Duke of The Bussman Mfg. Co. of St. Louis, on the subject of Overall Electric Protection. Mr. Duke stressed the fact that proper fusing of motors was essential and a money saver for the serviceman as well as his customer—a burnt up motor being a waste of material as well as time and labor. Educational Chairman Harris was congratulated on the fine programs he provided during the year. Thirty-two attended the meeting.

• **NIAGARA FRONTIER CHAPTER, Buffalo, N. Y., Sept. 10**—An educational talk entitled "Calcium Chloride as a Drying Agent" was given by member Howard Hourning and enjoyed by the 25 members and guests who heard it.

The meeting of October 15th drew an attendance of 35 members and guests. Sam Vullo was accepted into the chapter as an active member. A party followed the meeting and a large Farnsworth television set was won by L. W. Hickock. A buffet lunch and liquid refreshments were served.

• **ONTARIO MAPLE LEAF CHAPTER, Toronto, Ont., Sept. 17**—Educational Chairman H. L. Donnell told the meeting that speakers for meetings during the coming season would be chosen from their own membership, since it is felt there are a large number of members of sufficiently good calibre to take charge of these meetings in a way which would prove of value to all members. He then introduced the speaker of the

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evening, R. G. Henderson, Service Manager of Wagner Electric Co. Mr. Henderson limited his talk to single phase motors, after which he invited questions from the floor. W. Smallwood in his usual capable manner expressed the thanks of the members to Mr. Henderson and the Wagner Electric Co. Attendance totalled 52 members and 28 visitors.

• **PENINSULA CHAPTER, Newport News, Va., Oct. 7**—The first order of business was the election of officers. The following were chosen to serve for the coming year: A. J. Long, President; W. R. White, 1st Vice-President; B. C. Jarrett, 2nd Vice-President; C. D. Mitchell, Jr., Secretary-Treasurer; Henry Edmonds, Sergeant-at-Arms; and R. E. Thomas, Educational Director. Board of Directors—Henry Woodcock, A. M. Quinn and Lort Nightengale. Several suggestions were made to stimulate attendance at future meetings.

• **PHILADELPHIA CHAPTER, Philadelphia, Pa., Oct. 8**—John A. Locicento, Chairman of the Educational Committee, presided at this meeting in the absence of President Keil and Treasurer Keers who were attending the Boston convention. The educational program dealt with fractional horsepower electric motors. E. A. MacNamee and H. J. Miller of General Electric Motor Division, and Joseph Previty of Penn Electric Motor Co. in Philadelphia were the speakers.

• **PROVIDENCE CHAPTER, Providence, R. I., Oct. 6**—Two representatives of Mueller Brass Co. of Port Huron, Mich., were present at this meeting—P. O. Domke and A. V. Huntley, Jr. Mr. Domke gave an extremely interesting talk on new products made by his company which are now on the market, and also demonstrated the use of the new Mueller soldering flux very effectively. The business meeting followed, during which time Arthur E. Hogan and Everett G. Rubendunst were accepted into the chapter. The door prize of a manifold and gage set, donated by Hallam Richardson of the Rhode Island Refrigeration Supply Co., was won by Forest Bryant. Excellent sound movies of fishing activities were shown through the courtesy of the Eastern Company by Treasurer Spidel. Refreshments were then served to the thirty who attended.

• **SAN GABRIEL VALLEY CHAPTER, Arcadia, Calif., Sept. 2**—Guest speaker of the evening was Charles W. Chidester of C & S Equipment Co. of San Pedro. He talked on the subject of solving moisture problems and the various methods of using driers in a system.

On October 7th an outstanding program which was not only educational but most interesting was given by William A. Chapman, Jr., Commercial Sales Manager of Frigidaire. He told of what should be remembered in every day selling of service to the public. Every member present received worthwhile information which should without question make for a more successful service engineer. Following his talk he showed a film entitled "Ben Franklin" which was also on sales instruction.

• **SEATTLE CHAPTER, Seattle, Wash., Oct. 5**—O. C. Yates was chosen delegate to the International Convention. The educational program was provided by Earl Brooks of the United Electric Motors Co. Mr. Brooks gave an informative discussion on maintenance, repair and trouble shooting on all types of motors. At the close of the discussion questions were asked by the members.

• **SUNSHINE CITY CHAPTER, St. Petersburg, Fla., Sept. 2**—President Godfrey appointed the following additional directors who will serve for a period of two years: R. T. Duke, Joe Harris, F. Von Leue, P. D. Shaw and C. Hewlett. It was suggested that upon entering the meeting each member present the sergeant-at-arms a slip of paper on which is written any enigmatic experience that particular member has encountered. Later on during the meeting a round table discussion will be held covering these puzzlers.

• **TIDEWATER CHAPTER, Norfolk, Va., October**—This was a dinner meeting at the Wayside Inn with thirty-five members present. T. S. Bernard, retiring president, presided and introduced the new officers, who are: L. B. Gwinn, President; Ed Crutchlow, 1st Vice-President; K. U. Higgy, 2nd Vice-President; F. B. Lane, Secretary; Geo. M. Brown, Treasurer; Ned Buchanon, Sergeant-at-Arms; and R. H. Israel, Educational Director. A very interesting talk was given by Mr. Crutchlow on "The Value of Being a Member of the RSES." Door prizes were donated by Refrigeration Supplies of Norfolk.

• **TRENTON CHAPTER, Trenton, N. J., Oct. 20**—New members accepted during the business meeting were Joseph A. Barry, Charles Duane Hyer, Geo. A. Kaufman and Joseph Wm. Magrann. Earl R. Thomson was elected to represent the chapter as delegate during the 11th annual convention; George Frie alternate. A Nominating Committee was also appointed by the President. The door prize—an Imperial Brass Co. tube cutter donated by Jaeger's Sales and Supplies—was won by George A. Kaufmann. The 50-50 club drawing was awarded to Harry Jaeger.

• **TRI-COUNTY CHAPTER, Aurora, Ill., Sept. 18**—Harold Anderson will be the chapter's delegate to the International Convention, with Ray Surges as his alternate. A lengthy business meeting was held with 16 members and 2 visitors in attendance. On the educational program, R. C. Marous expressed his regrets that the speaker of the evening was unable to be on hand, then opened the question box and conducted discussion on questions asked. The 50/50 drawing of \$4.00 was won by Alvin Schuhr.

• **TWIN CITIES CHAPTER, Minneapolis, Minn., Oct. 5**—Dinner was served to 50 members, their wives and friends. All business was cancelled for the purpose of showing picnic moving pictures which were of interest to all. Following the pictures, Dr. Walter O. Walker of Ansul Chemical Co. talked on the subject of Solids in Refrigerating Systems—then gave those in attendance an op-

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portunity to ask questions. Everybody present enjoyed and took very much interest in Dr. Walker's subject and appreciated his understandable way of explaining the various solids found in refrigerating systems using different refrigerants; the causes of these solids and how to prevent them.

• **VIRGINIA CHAPTER, Richmond, Va., Oct. 12**—This meeting was devoted entirely to the educational program and was attended by a very large number of members as well as guests. George J. Boepple and Mr. Baker of Alco Valve Co. gave a very interesting talk and demonstration on Alco Thermo Valves—then presented a glass evaporator on which was demonstrated the new Alco Snap-Action valve with use of temperature bulb to control the setting. This valve was shown to hold temperatures to within 2 degrees and was very sensitive to temperature control. All members enjoyed this demonstration and asked many questions concerning valves in general and their application. After the meeting, refreshments of sandwiches and drinks were served.

• **WESTERN MASSACHUSETTS CHAPTER, Springfield, Mass., Sept. 28**—New officers elected for the coming year are: Bernard Seasons, President; Louis Chmiel, 1st Vice-President; Bradley Bailey, 2nd Vice-President; Harold Lambert, Secretary; James Cargill, Treasurer; Philip Elardi, Sergeant-at-Arms; and Frank Meyers, Educational Chairman. Directors—Thomas Spedding, Earl Fassell and Edw. Broderick. The Educational Committee showed a film, "Camera Magic," which was thoroughly enjoyed by those in attendance, numbering 20.

### Ladies Auxiliary

• **CANTON CARDINAL AUXILIARY, Canton, Ohio, Oct. 21**—A welner roast preceded this meeting. During the business session, Mrs. Finney and Mrs. Kuhns were elected respectively as delegate and alternate to the International convention in Chicago. A nominating committee consisting of Betty Nyman, Marie Risher and Mrs. Ward Beaber was appointed by the president.

• **CENTRAL ARIZONA AUXILIARY, Phoenix, Ariz., Oct. 12**—A pot luck dinner was served at South Mountain Park before the meeting was held. Plans was discussed regarding a New Year's Eve party and a committee was formed to find a place and arrange for the entertainment. Lois Rardin, Dorothy Rhoades, Doris Marlowe and Marian Sigafos will comprise the committee.

• **CLEVELAND AUXILIARY, Cleveland, Ohio, Oct. 14**—The meeting was held at the Hollenden Hotel, and after appointing a nominating committee, Agnes Baumgardner was elected delegate and Mary Schuld, alternate to the Chicago convention. Following the business meeting, Mrs. William Johnston gave a very interesting illustrated talk on holiday centerpieces. All centerpieces were given to various members when the talk was completed.

• **DAYTON AUXILIARY, Dayton, Ohio, Oct. 18**—The ladies met at the Miami Hotel and then went to the home of Nell Brock for the meeting. Alice Yauch and Mary L. Wagner were appointed delegate and alternate, respectively, to the International Convention. Nell Brock and Margaret Hopper were selected to purchase the prizes for the convention. Lunch was served after the meeting.

• **MONTEREY COUNTY AUXILIARY, Monterey County, Calif., Oct. 13**—Guest at this meeting was Mrs. Love of Gilroy who expects to become a member in the near future. A discussion was held on ways of increasing the treasury, and an auction was suggested as a good means of doing this. Before the meeting opened, a pot luck dinner was served for all the RSES members, and inasmuch as there were several varieties of cake left over, the men were again invited after the meeting for cake and coffee.

• **NIAGARA FRONTIER CHAPTER, Buffalo, N. Y., Oct. 15**—Mrs. Miller will represent this auxiliary at the International Convention, with Mrs. McCormick as alternate. Mrs. Mendell, 1st Vice-President of the National Auxiliary requested Mrs. Miller and other members of the Niagara Frontier Auxiliary planning to attend the convention, to assist her on the reception committee. Both these ladies attended the Boston convention. Mrs. McCormick won the dark horse prize.

• **OIL CAPITAL AUXILIARY, Tulsa, Okla., Oct. 19**—Plans for the auxiliary party were completed and it was decided to invite all members of the RSES Oil Capital Chapter. Although it is not possible to send a delegate to the International Convention, it was voted to send gifts as requested by the National Auxiliary. Meetings during the winter months were set for 7:30 p.m.

• **TWIN CITIES AUXILIARY, Minneapolis, Minn., September**—This was a dinner meeting with nine members present. It was reported that the "fish pond" at the picnic was a great success and a sizable profit was made. A Christmas party was discussed and a few suggestions given. Mrs. Taylor won the surprise package.

An open meeting was held in October. Members and their husbands enjoyed a delicious dinner and viewed movies of the annual picnic last July and a few old picnic films for added laughs. Mrs. Klahn was selected to represent this Auxiliary as delegate to the International Convention in Chicago, and Mrs. Ost was chosen alternate.

### Sciota Auxiliary Receives Charter

The Sciota Auxiliary was presented with its charter on October 21st at the annual banquet of the Sciota Chapter at the Snyder Hotel. International Director Earl Yockey made the presentation which was accepted by Mrs. L. B. Morse, auxiliary president.

Carl Hovenstein, President of the Buckeye State Association, showed an educational sound film on the production of copper. Music was furnished by the Chuck Wagon Pals, and Don Sansotta presented a magic program. Mrs. Betty Taft was appointed delegate to the International Convention in Chicago.

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**Servicing Hermetics** is published in answer to many requests from the field and is intended to provide a description of the operation, construction and field service on hermetically sealed units. While the book does not serve as a shop manual or provide specific instructions on rebuilding, it brings you the most complete "trouble-shooting" information on hermetics.

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# NEWS OF THE EQUIPMENT INDUSTRY



## Refrigeration Equipment Co. Opens Branch

**E. L. TRAMPOSH** announces the opening of a branch store at 332 Kansas Ave., Topeka, Kansas. **J. G. Yeager** will be manager of this branch of Refrigeration Equipment Company.

The company has also just completed moving its Wichita office to a new building at 318 North Main St., which will provide larger quarters, better parking facilities and more display room space. The Kansas City washing machine parts department has also been moved to larger quarters at 1819 McGee St., Kansas City, Mo.

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## Deep Freeze Purchases Frostaire

**SALE** of the Frostair Division of the General Tire & Rubber Company to the Deep Freeze division of the Motor Products Corp., of Detroit, was announced recently in Chicago by **Max Gilman**, Frostair's general manager.

Effective October 1, the purchase by Deep Freeze includes patents, tools and dies, **Gilman's** announcement said.

Frostair, a home refrigerator unit, was manufactured at a Morrison, Ill., plant but this operation now will be transferred to Deep Freeze's North Chicago plant.

In announcing the sale, **Gilman** said: "General entered the refrigerator field originally for the purpose of providing a source of additional revenue for its distributors and dealers. We found, however, that to remain in the field it would be necessary for us to increase the line and get both feet into the appliance business. Rather than do this, which might constitute a serious distraction from the tire business, we felt it would be more sensible to turn the operation over to a good, responsible concern already in the appliance field."

General entered the refrigerator busi-

ness in 1944, introducing in Frostair the most progressive unit on the market. It featured "cold sleeve" cooling which eliminates dehydration and also the necessity for frequent defrosting. Deep Freeze now has acquired this patent rights.

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## Philco Refrigeration Program Instituted on Okinawa

**HEADQUARTERS**, 1st Air Division at Okinawa has announced the institution of a special refrigeration mechanics training program, under the supervision of a Philco refrigeration team set up in a series of quonset huts in the air installation areas of both Kadena and Naha Air Force Bases on Okinawa.

Philco technical representatives were sent directly from Philadelphia as a refrigeration team to recondition all refrigeration units on the island and serve as instructors for courses in refrigeration mechanics. Philco representatives are teaching in the school at Kadena and at Naha.

Teams of six men are now busily engaged in the important job of overhauling, repairing, and maintaining the various types of refrigeration units used by our military forces abroad. These units may vary from large permanent refrigeration installations to small, portable trailer-type units. Important refrigeration installations such as cooling units for blood bank storage are also among the specialized equipment upon which Philco Technical Representatives work.

In addition to the overhaul, maintenance, and repair phases of the work of these teams, they are hard at work on a training program designed to furnish to the Armed Forces a continuous supply of men trained to carry on these important functions. They have established, in every location where they work, at least one training school. As

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many as forty students are enrolled in a single school. The training program of sixteen weeks consists of a minimum of four hours of formal classroom instruction each week. On-the-job training takes up the remaining thirty-six hours of the weekly schedule. A system of rotation of men within the training group ensures that each man becomes proficient in all phases of the training course.

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### Hajoca Corporation Opens New Philadelphia Branch

**A**N IMPORTANT milestone in Hajoca Corporation's plans for thoroughly modernizing warehouse and service facilities in their 31 strategically located wholesale distribution centers serving the plumbing, heating and refrigeration supply fields, as well as industrial requirements from Newark to Tampa, was announced by Hajoca's President, W. A. Brecht, with the opening of a new branch warehouse and sales office at 225 West Erie Avenue, in the "geographic centre" of Philadelphia.

"Recognizing our obligations to our customers," said President Brecht in dedicating this new structure, "to provide a complete and thoroughly competent wholesale service, we have drawn on our 90 years of experience as prime wholesalers in planning and design. I sincerely believe (continued Mr. Brecht) that our efforts here are as yet unequalled in facilities for serving the trade's many and varied needs."

The building, the last word in design, contains 124,000 square feet of floor space under one roof, housing offices, display rooms, commodious counter facilities and warehouse, as well as a completely modern pipe fabricating plant capable of handling up to 24" diameter pipe, and the company printing plant.

Thorough mechanization for efficient materials handling includes a giant magnetic hoist operated from an 80 foot bridge crane, covering a loading area of 24,000 square feet. Numerous other hoists, cranes and monorail equipment is in evidence throughout the plant.

Seven freight cars may be loaded or unloaded simultaneously within the building with further accommodations for two cars at an outside platform. Shipping and receiving departments are strategically located to permit the uninterrupted flow of materials in one direction.

Show windows, extending 200 feet along this widely travelled highway, concentrate attention of Hajoca's diversified lines in the daytime while a 23 foot high floodlighted replica of the famous Hajoca trade mark reminds the night passers-by of Hajoca's enviable 90 year record of achievement in the wholesale fields.

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### Refrigeration Supply Company Moves to New Quarters

**N.** L. SULENES announced recently the removal of the Refrigeration Supply Company to new quarters at 17



View of the new Hajoca branch in Philadelphia.





## MINI-VOLT

Instantly read voltages right off dial. 65 to 660 v. A.C. Also D.C. Virtually burnout-proof. Guaranteed for 10,000 hours' operation. Plastic case. 12" flexible test leads. And only \$2.75 list!

- Not only distinguishes between 110, 220 etc. volts, but measures line voltage close enough to show up to 3 or 4 volt drop between meter and load terminals on 110 v. line.

- No refrigeration serviceman need now be without definite knowledge of whether faulty operation of motors, magnetic valves, etc. is due to improper terminal voltage.

- Checks for blown fuses, accidental grounds, circuit continuity. Useful for electrical trouble-shooting in general.

- Warns of "live" wires and equipment, as protective measure.

It's a "must." Saves time, money, life and limb! Order from supplier, or from

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N. 31st St., Billings, Montana. The move was completed November 15th.

According to Mr. Sulenes, this move will double the available floor space and offer the trade in the area a much better service than was heretofore possible in the old cramped quarters.

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### Jack & Heintz Acquires WAA Facilities

**JACK & HEINTZ** Precision Industries, Inc., Cleveland, Ohio, announces it has completed arrangements with War Assets Administration for the purchase of machinery and equipment, having an original cost in excess of \$5,000,000. This equipment formerly under lease, is required for the manufacturing plans and programs now under way in the company.

The company also announced that it has started negotiations with WAA to purchase buildings 3 and 4, part of its Bedford plants, which are now held under lease. Accelerated activity in Aviation products related to the company, together with other commercial product lines now being manufactured, plus those under development, have made necessary certain rearrangements in the plant and manufacturing structure of the company.

As part of its over-all program, Jack & Heintz also announced it has decided to sell their Berea Rd. plant. This move is for the purpose of consolidating its manufacturing facilities into a more con-

centrated structure. This plant had been acquired by the predecessor company, Jack & Heintz, Inc., and is located 15 miles from its main plants.

★ ★ ★

### Heavy Shipment from United

**SHIPMENT** of eighteen carloads of commercial refrigeration equipment from their Hudson, Wisconsin plant plus forwarding of an unusual number of LCL orders was announced recently by the executives of the United Refrigerator Company. It was the largest single day's shipment in the history of the Company. Reorganized under new management about a year ago, United is one of the pioneers in the industry, and manufactures a complete line of beverage coolers, beer dispensers, ice cube makers, freezers, reach-ins, and walk-ins.

★ ★ ★

### H. W. Blythe Co. Moves

**H. W. BLYTHE** Company, 529 North Milwaukee Ave., Chicago, Ill., had their formal opening of their new quarters October 29. The festivities began at 4:00 p.m. and between 350 and 400 people attended. Among the notables and well-wishers present were Mayor Kennelly of Chicago and other city officials. The refrigeration equipment manufacturers were well represented, as were the service field, dealers group and others. Refreshments were served to the visitors and there were a number of door prizes offered.



The Refrigeration Contractors Association of New Jersey, Inc. have recently joined the ranks as an Affiliated Association of NARC. They are the 27th group to join the ranks to date. In the picture shown, seated left to right are: Kurt Bader, R. C. Holder, Sergeant-at-Arms; C. W. Ford, Vice-President; E. C. Newton, President; A. D. Dietl, Secretary-Treasurer; F. R. Bader, Chairman; J. V. Jackson. Standing: F. Nuckol, E. Geiger, Director; J. Schiller, S. J. Siegel, H. Rohloff, Director; C. A. Taylor, Director; G. Feaster, M. Dee Petillo, and M. Lechich.



**FAN-E-FEX**  
The All-Purpose Unit  
and

**ZER-E-FEX**  
The Low Temperature  
Water Defrost Unit



**FLO-E-FEX**  
Space Saving  
Wall Unit

# KRACK ENGINEERED

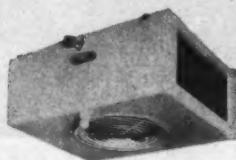
UNIT COOLERS, FIN COILS  
AIR CONDITIONING

Over 112,000  
MAN HOURS

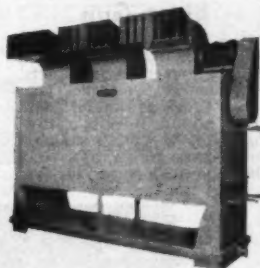
of diligent laboratory re-  
search have gone into  
the development of  
KRACK Engineered Unit

Coolers. Add to this the many years of  
field experience compiled by KRACK Engi-  
neers and you will see how you get more for  
your dollar in every way when you specify a  
KRACK Engineered Unit Cooler on your next  
refrigeration application. A complete line of  
low-side refrigeration and air conditioning  
equipment from the tiny Fan-E-Fex Junior  
to the big Blo-E-Fex Floor Type Unit.

Write for further details and information to  
**REFRIGERATION APPLIANCES, INC.**



**STRAT-E-FEX**  
The Modern  
Ceiling Unit



**BLO-E-FEX**  
The Big Floor Unit

917-23 W. Lake St.  
Chicago 7, Ill.

## STERILAIRE\*

THE *Ultra Violet*  
**GERMICIDAL LAMP**

for use only in refrigerated areas



STERILAIRE\* brings to the refrigeration industry  
new opportunities for service and profitable sales.  
Refrigeration dealers sell STERILAIRE with new  
walk-in boxes. Service men sell STERILAIRE to their  
regular customers.

These Wholesalers merchandise STERILAIRE. Ask them for details

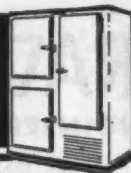
**ARKANSAS**  
Refrigeration & Electric Supply Co.  
**CALIFORNIA**  
Associated Refrigeration & Equip-  
ment Co.  
Authorized Supply Corp.  
Rauch & Monroe  
Refrigeration & Industrial Supply Co.  
Refrigeration Service, Inc.  
Refrigeration Supplies Distributor  
Valley Refrigeration Supply Co.  
Van's Supply  
**COLORADO**  
Western Appliance Corp.  
**FLORIDA**  
Ace Refrigeration Supplies  
**ILLINOIS**  
Chase Refrigeration Supply  
Service Parts Co.

**MINNESOTA**  
Refrigeration & Industrial Supply  
Co., Inc.  
**MISSOURI**  
N. O. Nelson Co.  
Superior Refrigeration Supply  
**MONTANA**  
Refrigeration Supply Co.  
**NEW JERSEY**  
W. I. Freeman & Co., Inc.  
**NEW YORK**  
County Seat Supply Co., Inc.  
Halvey Supply Co.  
**OHIO**  
Radio & Refrigeration Supply Co.  
Ultra-Violet Equipment Co.

**OKLAHOMA**  
K & M Supply Co.  
M & V Supply Co.  
Mackinburg Supply Company, Inc.  
**OREGON**  
Peerless Pacific Company  
**PENNSYLVANIA**  
Joyce Refrigeration & Equipment Co.  
**TEXAS**  
N. O. Nelson Co.  
Texas Refrigeration Supply Co.  
United Refrigeration Company  
**WASHINGTON**  
Peerless Pacific Co.  
Refrigeration Wholesalers, Inc.  
**WISCONSIN**  
Gustave A. Larson Co.

**ULTRA-VIOLET PRODUCTS, INC.**  
\*Trade mark reg. U.S. Pat. Off. 5205 Santa Monica Blvd.  
LOS ANGELES 27, CALIF.  
EXPORT: Fraser & Hansen, Ltd. San Francisco

# NEW IMPROVED



# AND EQUIPMENT

Information in this department is furnished by the manufacturer of the article described and is not to be construed as the opinion of the Editor.

## Blast Gun

**TORNADO**, Combination Blast Gun, manufactured by Engineered Products, Inc., Denver, Colorado, is a versatile adaptation of sand blasting and solvent spraying, according to its makers. Tornado improves and simplifies surfacing, production,

The gun balances perfectly in the hand, is light to handle and easy to use. Simply point the gun at the surface to be prepared and pull the trigger. Paint melts away; rust, scale and oxidation disintegrate. Solvents penetrate to flush out grease, gum and tar. Oils and liquids penetrate where needed.



cleaning and finishing in automotive and industrial fields. Air operated, portable and efficient, it leaves no buffing marks, no grooves or ridges, no scuffed, gouged or uneven surfaces, has no shafts to break, no wheels to dress and no motors to burn out.

The gun is particularly useful in reaching inaccessible places such as wheels, drip mouldings, grill work, brick and rough finished walls, rungs, spoolings, steam radiators, fins, odd shapes, corners, crevices and close fittings.

The Tornado Blast Gun is connected to any air line and is equipped for sand blast operations or spraying solvents and liquids. The nozzle is easily changed by loosening a retaining nut and slipping another nozzle in place.

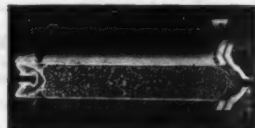
Two attachments are supplied with the gun; an "Abrading" case-hardened nozzle for use in "blast" operations and a "Solvent" nozzle for use with oils or chemicals. The abrading nozzle incorporates a "safety" tip that drops off when barrel needs replacement.

It is equipped with a 3 pint container designed for quick, sure locking with a quarter turn. No threads to sand-strip or jam. The turbulence shield is designed to stop and retain the bulk of spent abrasive that ricochets from surface being worked.

## Water Filter

**PRODUCTION** of a new compact, self-contained water filter of a renewable cartridge type is announced

by Magneswitch, Inc., Chicago manufacturer of automatic liquid control and processing equipment. De-



signed primarily to meet the need for effective water conditioning at point of use on beverage fountains, coffee urns, individual water fountains, and domestic water taps, the Magneswitch filter also has application on drink carbonators and syrup mixing units where the taste of chlorine or unpalatable impurities is objectionable. The basic model of the filter is made up of a specially prepared mineral cartridge measuring approximately 3" dia. x 13" and housed in a cylinder of similar dimensions. A bolted end cap is provided for access to the filter cartridge.  $\frac{1}{4}$ " in and out pipe connections are located at top and bottom.

The mineral filtering element is effective in absorbing sundry tastes and odors present in solution but not chemically combined with the water. This includes chlorine used for sterilizing water and, to a degree, hydrogen sulfide present in certain natural waters. Of equal importance for beverage uses is the action of the filter in clarifying water to give it what is known as "polish" or "sparkle".

## Bottle Cooler

**A** NEW popular-priced Automatic Coin Cooler has been added to the Cooler line by Mills Industries, Inc., of Chicago. This Cooler vends 65 bottles of cool refreshment and by means of additional handy storage space pre-cools 17 additional bottles ready for placing in

## IT'S KNOW HOW WITH EXPERIENCE THAT COUNTS!

The new book **THE REFRIGERATION SERVICEMAN'S MANUAL** will answer for you most of the puzzling questions that have stumped you. For ready reference and for study this book is the answer to the Service Engineer's need for the latest information on refrigeration written in terms of general principles. Applying the principles to the particular problem in hand enables you to find the answers to your questions about any type of mechanical refrigeration.

Written by a practical engineer Edward B. Magnus.

Pocket size—4 3/4" x 7 1/2"—Limp binding  
704 pages. \$5.00.

Order or pick up from your jobber TODAY!

**WILCOX & FOLLETT CO.**

1255 S. Wabash Ave.

Chicago 5, Ill.

## New Second Edition HOUSEHOLD ELECTRIC REFRIGERATION

By John F. Wostrel and John G. Praetz  
Second edition, 472 pages, 20 illustrations,  
\$4.50

Presents everything needed by the man who wishes to service electric refrigerators, from a simple explanation of how refrigerators work, to detailed practical methods and data on installation, testing, servicing, and adjusting, trouble-shooting, repairing, etc. It gives descriptions and illustrations of many popular makes of machines, showing both the entire systems and details of parts. It emphasizes the basic points of construction and operation so that the reader can handle practically any type of machine.

Order copies from:

**Nickerson & Collins Co.,**

433 N. Weller Ave.

SERVICE ENGINEER

Chicago 44

SERVICE ENGINEER

## BEN-HUR Dealers Enjoy A 4-TO-1 SALES ADVANTAGE in FARM and HOME FREEZERS



18 cubic foot  
Model 2187



9 cubic foot  
Model 197

• Choice of 4  
popular models  
to match every  
family need.



12.5 cubic foot  
Model 2127



6 cubic foot  
Model 167

• You turn prospects into customers faster with the BEN-HUR Freezer franchise! You can offer every prospect COMPLETE-LINE-CHOICE . . . a BEN-HUR freezer that matches exactly the need of any family in your community — with 6, 9, 12.5, and 18 cubic foot cabinets that hold from 300 to 900 lbs. of frozen food.

Each of the FOUR popular BEN-HUR Models takes the lead in modern styling, convenience features, food freezing and storage efficiency — and operating economy. Table-top designs, greater capacity in less floor space, special safety hardware, counter-balanced covers, "slamless" locks, hermetically sealed insulation, separate freezing compartments — these and many other features make BEN-HUR selling easier . . . And in the home they promise customer enthusiasm through longer years of food savings and better meals.

Help EVERY family "SLASH THE HIGH COST OF EATING" with a BEN-HUR Freezer. . .

**BEN-HUR MFG. CO.**

Dept. RS, 634 East Keefe Avenue,  
Milwaukee 12, Wisconsin





the vending racks when refilling cabinet. Vending of warm bottles to the first customers after refilling is avoided.



The compact design—only 21½" wide by 21" deep makes this automatic drink salesman a big revenue producer and particularly useful where space is limited. Operation of this new Cooler—inserting coin, removing bottle and crown—in accomplished with one hand. The "68" is equipped with Mills automatic coin changer, allowing use of nickels, dimes, or quarters. This prevents loss of sales where proper coin is not available. Correct change is returned if a dime or quarter is inserted.

## Air Conditioner

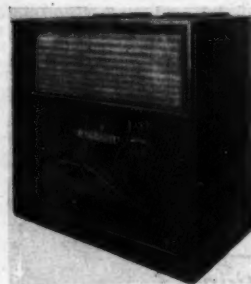
**TWO** new heavy-duty, packaged air conditioners of 10-ton capacity, designed for hotels, stores, theaters, clubs, institutions and business houses, have been added to extensive lines produced by Frigidaire Division of General Motors.

Both units are compactly-built and are designed for installation remote from the conditioned area. These new conditioners promise positive cool comfort during summer months, or by adding a heating coil, cozy warmth during the entire winter season.

The two new air conditioners are similar in design and

function, except that one model has been developed for use with a Frigidaire evaporative-type condenser. This unit is recommended for use in localities where the water supply or drainage is limited; where rates are prohibitive, or where ordinances restrict water usage.

Installation of the new units is comparatively simple. Because they are self-contained, the new models may be completely installed in a few hours time by merely making the necessary power, water, drain and control connections. If necessary, this type conditioner can be disconnected and reinstalled in a new location with full salvage value.



Constructed of heavy sheet steel with angle iron reinforcements welded into position, the cabinet is finished in

two-tone brown lacquer. The cooling unit is of special design, employing the Frigidaire "Multipath" principle of refrigerant distribution, assuring even temperatures and uniform humidity conditions, regardless of outside weather conditions. A thermostatic expansion valve regulates the flow of refrigerant to the cooling unit in accordance with operating conditions.

High capacity compressors operate cooling units of both models. A 10-horsepower water-cooled reciprocating-type compressor supplies refrigeration to one of the conditioners while a 10-horsepower evaporative-type unit operates the other. Special rubber mountings reduce vibration.

Twin condensers of the water-cooled finned type, are mounted on a structural steel base. Series-type flow condenser heads and an automatic water valve are supplied for city water application. On the other hand, parallel flow heads may be obtained for use with a cooling tower.

Centrifugal blower fans with 12-inch blades circulate cool, filtered, dehumidified air to conditioned areas. Both the fan compartment and cooling unit are insulated with sound-absorbing and heat-retarding material. Additional acoustical insulation on the inside top of the machine compartment reduces compressor noise.

## Pipe Mending Cement

**PLUMBER** Krak-Stik is a positive seal for repairing split soil pipes, sandholes, cracked pipes, gaskets, etc. Even pinholes are completely sealed. It stops the leak instantly even while liquid runs through the pipes under pressure or remains in the container. It assures a posi-

tive seal for water, gas, acids, brine, etc. All that is required is to rub the stick heavily over any crack or leak in pipes, vats and other liquid containers.

Plumber Krak-Stik makes a positive seal for any leak, even in ordinary water pipe splits that occur because of





**MORE POWER** for better,  
faster condenser cleaning

### IDEAL "Hand Type" CLEANER

This powerful cleaner — with its 1½ h.p. continuous duty motor—BLOWS out every bit of matted dirt and lint from condenser units . . . performs all other cleaning jobs with equal efficiency. VACUUMS dirt from inside of cabinets and other hard-to-get-at places. Light weight, 14½ lbs.; perfectly balanced. Other attachments for spraying, drying. Also available in Medium Duty size—¾ h.p., 9½ lbs.—IDEAL INDUSTRIES, Inc., Sycamore, Ill.

**IDEAL**

*Distributed Through* **AMERICA'S LEADING WHOLESALERS**

CANADIAN DISTRIBUTOR: IRVING SMITH, LTD., MONTREAL

**maco**

## SNAP-ON COPPER TUBE CLIPS

**FIT SNUG-HOLD TIGHT** - while both hands are free to work

**YAN type HANGERS**  
Use for extra neat installation—made of all copper for tube sizes ¼", ¾" & 1" O.D. and pipe sizes ¼", ½" & ¾"

**STRAP HANGERS**  
Made of ½" brass strip—Adjustable for all sizes of tubing or pipe, ¼" O.D. and up.

**BRASS STAPLES**  
Handy for a score of uses, especially for radiant heat installations.

A MACO exclusive in new-design tube straps that "snap" on and held by themselves, leaving both hands free. Available for ¼" thru 2½" O. D. tube sizes.

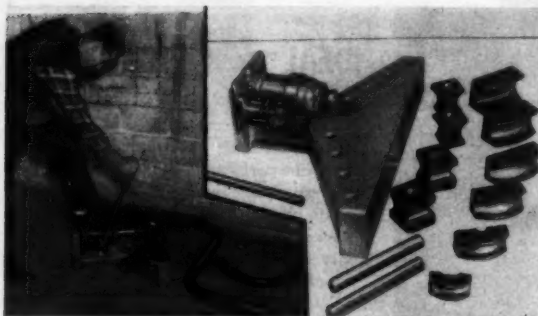
*These and other MACO products are available through leading wholesalers, everywhere. Literature and prices available upon request.*

**MADISON PRODUCTS COMPANY**  
EAST GREENWICH, R. I.

freezing temperature. Pipe surfaces do not have to be prepared for application of Plumber Krak-Stik.

Plumber Krak-Stik is handy, fast, clean and positive pipe mending cement in stick form.

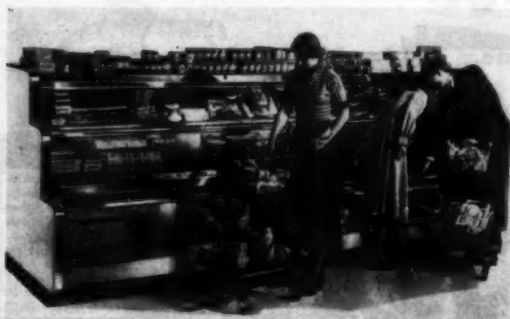
## Portable Hydraulic Bender



**T**HIS new lightweight, portable tool forms smooth, uniform pipe bending operations right on the job. Weight has been kept down to a minimum without loss of strength. The combined weight of the jack and frame is only 83 pounds. Removable hydraulic jack simpli-

fies the service problem and can be used for many other useful purposes. Open jaw construction speeds up production. The 30 inch steel frame is electrically welded and heavily reinforced. Comes complete with  $\frac{3}{4}$ , 1,  $1\frac{1}{4}$ , 2, and  $2\frac{1}{2}$  inch dies. Catalogue sheet available.

## Dairy Case



**D**ESIGNED to provide the mass display and large capacity required by the larger market, the latest model Hill open type refrigerated dairy case has wider and deeper display shelves. Top deck is over 12" deep

and 18" wide while bottom deck measures over 13" deep and 29" wide. This new fixture has been added to the line as a companion piece to the popular triple deck Model 336 Dairy Case.

Especially adapted for self-

service of dairy products, foods are easy to reach. The top shelf, backed by a wide full length mirror creates a stand-out display. The stand is made in Add-A-Unit sections, each 6'2" long. Ends are  $\frac{3}{4}$ " thick. Any number of sections may be joined together to make a continuous display of any desired length, uninterrupted by space-wasting in between ends.

Sections are  $54\frac{1}{4}$ " high and  $44\frac{3}{4}$ " deep. An illuminated canopy can be furnished for placing on top of the unit.

## Duo-Temp

**D**UO-TEMP, the only fully mechanical dial type indoor-outdoor thermometer, has been completely redesigned and restyled by its manufacturer, Jas. P. Marsh Corp., Dept. Q-1, Skokie, Ill.



On the dial, gold characters stand out in sharp contrast to their deep dubonnet background. The upper (outdoor) scale reads from  $-30^{\circ}$  to  $+110^{\circ}$  F., the lower (indoor) scale from  $+50^{\circ}$  to  $+90^{\circ}$  F. Speedometer-type pointers clearly indicate the temperature reading so that it may be read at a glance. Protection for the dial is furnished by a strong molded crystal that is curved to prevent reflection of light.

Installation of the Duo-Temp remains a simple task. The sensitive metal bulb is fastened outside the building on the bracket provided with the instrument, and the armored capillary tubing is small enough to pass between the sash and casing of a window.

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N

**the LIQUID EYE**



a NEW type of liquid indicator

2 new models

MALE-FEMALE

**SAFE . . . LEAK-PROOF . . . EASY TO INSTALL . . .**

### *Fully enclosed* GASKET

The pliable gasket is enclosed on three sides by a brass housing, prevents the gasket from creeping.

### *Lapped* GLASS

Lapped glass surface makes a fourth side to fully enclose the gasket making a perfect seal. See inset above.

Ask to See the LIQUID EYE at Your Jobber

PERMANENT COPPER FLARE INSERT simplifies direct installation on dryers or receivers. Eliminates use of extra flare nuts thus fewer connections are necessary.

DOUBLE PORT  
ELIMINATES PRESSURE DROP  
POSITIVE REACTION OF INDICATOR  
FLOATING PYREX TUBING INSURES SAFETY  
PLIABLE GASKETS, IMPERVIOUS TO REFRIGERANTS AND OIL

**ALLIN MANUFACTURING COMPANY** • 1153 W. GRAND AVE. • CHICAGO, ILL.

HOWE REFRIGERATION KNOWN THE WORLD OVER

## HOWE-TO HAVE TROUBLE FREE REFRIGERATION!

"I've never seen any machine that operated so trouble-free." Here's proof . . . from a user . . . of an important advantage Howe Refrigeration Equipment offers.

Trouble-free operation cuts risk of food spoilage. Saves money . . . time. Let Howe's 36 years of specialization solve your refrigeration problems with equipment basically right. Howe machines give less trouble . . . keep running longer. They're designed to do that. Inquiries invited.



Howe-Conditionaire Unit Cooler

Ammonia compressors 2 to 150 tons; self-contained automatic ammonia units; methyl and Freon condensing units; shell and tube condensers; brine and water coolers; unit coolers; fin coils; locker freezing units; air conditioning (cooling) equipment.

## HOWE ICE MACHINE CO.

2825 Montrose Ave., Chicago 18, Illinois • Distributors in all Principal Cities  
EXCLUSIVE REFRIGERATION EQUIPMENT BUILDERS SINCE 1912

SERVICE ENGINEER

109

November, 1948

## TRADE LITERATURE

### Harry Alter Catalog

THE Harry Company is pleased to announce that their new Fall and Winter catalog "Dependabook No. 148" has just been mailed. This is the biggest catalog ever published by The Harry Alter Company, and is the third catalog to be issued this year by them. Comprising 160 pages, they have added many more lines, among which are Copeland and Copelametic compressor parts; Mills compressor parts; Norge "Rollator" highsides and compressor parts; Leland motor parts; Redmond micromotors and blowers; Carborundum grinding wheels and stones; and hundreds of other new items. In addition, the latest price changes on all lines have been made.

If your copy hasn't reached you yet, write for one on your letterhead to The Harry Alter Company, 1728 S. Michigan Ave., Chicago 16, Ill.

★ ★ ★

### New G. & E. Catalog

THE G. & E. Equipment Supply Co. now at their new location at Ogden Ave. and Fulton St., has just released their new Winter '49 catalog. Again, it is their policy of giving outstanding values along with prompt, dependable and courteous service. The catalog offers a complete selection of refrigeration and electrical supplies and parts at to-

day's lowest prices. Copies are now available and may be obtained by writing on company letterhead to the G. & E. Equipment Supply Company, Ogden at Fulton Street, Chicago 7, Illinois.

★ ★ ★

### Sheldon Catalog

THE new Sheldon G-48 catalog describes, illustrates and gives detailed specifications for the first time of the new post war Sheldon and Sheldon-Vernon machine tools, accessories and attachments.

★ ★ ★

### Revised Refrigerant Manual

PROPERTIES of Commonly-Used Refrigerants, first published in 1946, is now available in a revised 1948 edition, according to an announcement by the Air Conditioning and Refrigerating Machinery Association, publishers of the manual.

In the 1948 Revised Edition of this authoritative and widely-used publication, ACRMA presents new tabular data and charts showing the thermodynamic properties of ammonia below minus 60 F; new pressure-enthalpy diagrams for "Freon-11", "Freon-12", and "Freon-22", showing data for a greater range of conditions; new tabular data for "Freon-12" covering the temperature range from 140 F to 232.7 F, and for

"Freon-22" covering the temperature range from 120 F to 160 F.

The inclusion of this additional data has not increased the price of this 105-page publication — it continues to sell at \$1.00.

★ ★ ★

### Application Specs. On Mineral Wool

SPECIFICATIONS ON how to apply mineral wool insulation to low-temperature jobs have been brought up to date and will be made available this fall to contractors, commercial and industrial users, and to owner-operators of cold storages, locker plants, and other low temperature installations. The authoritative standard was prepared by the National Bureau of Standards in cooperation with the Technical Committee of the Industrial Mineral Wool Institute. Mimeographed copies are currently being distributed to users, distributors, manufacturers, and to cooperative societies and associations for industry-acceptance of the technical details of the work.

Major additions give properties and installation details for the industrial batt, board, and block forms of mineral wool, and supplement present sections on loose, granulated, and felted forms. New sections are included on foundations and on insulation supports. New text and illustrations cover: floor constructions in which the insulation carries the load; ceiling constructions in which the mineral wool is either installed above, or suspended from the ceiling; and



## FOR TROUBLE-FREE PERFORMANCE



on your next job choose a

# MILLS

a condensing unit for  
every installation

Mills Industries, Incorporated • 4100 Fullerton Avenue • Chicago 39, Illinois

## MANY RESTAURANTS—HOSPITALS—CLUBS IN YOUR AREA NEED NEW EQUIPMENT

Here is your opportunity to sell your customers a NEW 20 or 30 cubic foot porcelain interior and exterior reach-in refrigerator complete with CONTROLLED Forced *Air-Flow* lowside and nationally known open type condensing unit.

20 cu. ft.—Complete **\$443.00**

30 cu. ft.—Complete **\$485.00**

larger sizes also available

All prices F.O.B.  
Chicago Warehouse

### SPECIFICATIONS

P20—20 cu. ft.; 1/4 H.P. unit;

46 1/2" W x 30" D x 73 1/2" H

P30—30 cu. ft.; 1/3 H.P. unit;

54" W x 30" D x 73 1/2" H

Hermetically Sealed Blower Motor.

Return Air-Flow duct built into cabinet wall.

Open type, standard make condensing unit.

Cabinet built by a leading manufacturer.

*Write for full particulars and illustrated literature.*

## COR-O-NET Merchandise Specialties

3323 W. Ogden Ave.

Chicago 23, Illinois

*Chicago's largest outlet for used refrigerators.*

*Write us for available makes and prices.*

masonry and partition wall designs utilizing block and board forms of insulation.

In all, five new line drawings, bringing the total to 17, have been added. They show recommended arrangement of such elements as foundations, vapor seals, cross furring, hangers, insulation, metal lath and finishing.

An added table gives recommended insulation thicknesses for average operating conditions and supplements the present tables on minimum thicknesses.

A number of sections have been enlarged: for example, the properties of thermal conductivity, density, moisture absorption, corrosive properties, odor, and fire resistance have been more fully cataloged. Similarly, the section on auxiliary materials has been expanded to include subsections on asphalt, asphalt primer, cold asphalt mastic, asphalt emulsion, reinforcing membranes, vapor barrier membranes, vapor permeable membranes, wood, metal, cement, and hydraulic lime specifications.

Additional information on surface preparation of monolithic concrete, unit masonry, plastering and asphalt primer are given. Considerable detail has been added to the section on vapor barriers, and the section on finishing with portland cement plaster, asphalt mastic, wood and sheet materials has been enlarged. In the section on pipe insulation, a revised table gives minimum built-up thicknesses for various operating temperatures.

As soon as available,

copies of the new Standard can be obtained through the U. S. Government Printing Office or

the Industrial Mineral Wool Institute, 441 Lexington Avenue, New York 17, N. Y.

## PERSONNEL NOTES

### Ansul Moves Export Office

THE export division of Ansul Chemical Company has been moved from Philadelphia to the home office at Marinette, Wis. C. B. "Barney" Beidler is manager of the division.

Ansul has been exporting refrigeration chemicals for 25 years. In the last 10 years, the company



C. B. BEIDLER

has manufactured and exported dry chemical fire extinguishers. Ansul has distributors and representatives in all Central and South American countries and in many European, African and Asiatic lands.

Beidler, a 15 year export veteran, studied foreign trade at the University of Pennsylvania. He is a member of the Export Managers Club of New York. Ansul Chemical belongs to the Philadelphia Foreign Traders Association.

### Henry Appointments

HENRY VALVE CO. of Chicago announces the appointment of Roy C. Yantis as General Sales Manager. Mr. Yantis joined the Henry organization last November as Assistant Sales Manager. Previous to joining the Henry



ROY C. YANTIS



R. S. DAWSON

organization he was associated with Frigidaire Corporation, Gibson Refrigerator Company and was Chief Refrigeration Engineer for the Wolverine Tube Division of Detroit.

## NEW! "ALCO-FLAME" LEAK DETECTOR

Here it is... the new Justrite Leak Detector, Model 1240—designed to burn alcohol. Quickly detects leaks in refrigeration systems using halide gases... helps on repair work.

This handy tool is also a soldering iron or a blowtorch. Comes complete with soldering tip and flame reducer. Easily convertible.

It's handled the same as the famous Justrite "Gas-Operated" Leak Detector. Built of the finest materials. Simple construction. Proven design.

The Justrite "Alco-Flame" Leak Detector, Model 1240, is ready for delivery. See your jobber today.

**JUSTRITE MANUFACTURING CO.**  
2063 N. Southport Ave., Dept. B-7, Chicago 14, Ill.



## The Premier SELF ALIGNING VALVE GRINDING KIT

Makes it easy to grind, finish and test recessed or flush valve seats (piston or flap-jobs). Fast. No more tiresome hand lapping. Saves buying new parts.



"**Couldn't Get Along Without It**"  
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The company also announces the opening of a West Coast office and Warehouse at 736 E. Washington Boulevard, Los Angeles, October 1, which will be headquarters for the Pacific Coast, Idaho, Nevada and Arizona. This office will be in charge of Richard S. Dawson, who will be Western District Manager. Dick Dawson is well known in the industry, having been active in ASRE, RSES and REMA. Emergency warehouse stocks will be maintained.

★ ★ ★

### G.E. Appointment

**PAUL E. MILLS** has been appointed Manager of Manufacturing of the Remote Equipment Division at the Bloomfield Works of the General Electric Company, it has been announced by A. W. Wennerstrom, Manager of Manufacturing for the Air Conditioning Department. In addition to his new appointment Mr. Mills will continue as Assistant to Mr. Wennerstrom.

Mr. Mills joined the General Electric Company in 1925 at Schenectady and was placed on rotational assignments under the Business Training Program. He continued in the General Office at Schenectady until 1932 when he was appointed traveling auditor. He spent the greater part of the period from 1932-39 as secretary-treasurer and director for eight transportation companies which were GE affiliates.

Returning to the Company at Bloomfield in 1939, he was appointed Department Accountant and General Assistant to

the Air Conditioning Department Comptroller. In 1948 he was appointed Assistant to the Manager of Manufacturing.

★ ★ ★

### New Branches for General Controls

**J. F. RAY**, Director of Sales for General Controls, has announced the appointment of **B. L. Lerch** as Factory Branch Manager of the new St. Louis office. Mr. Lerch joined General Controls September 1, 1947 as Branch Manager of the



**B. L. LERCH**

Dallas office. He was formerly with the Mercoid Corporation in Chicago for 10 years. The new St. Louis office will serve the eastern half of Missouri, Southern Illinois, Southwestern Indiana, Western Tennessee, Northeastern Arkansas and Northern Mississippi.

**O. D. Shaddox** was appointed Factory Branch Manager of the new Oklahoma City office. Mr. Shaddox joined General Controls December 1, 1945 as Sales Engineer at the Kansas City Factory Branch. The new Oklahoma City office will serve all of Oklahoma and all but the northeastern part of Arkansas.

The addition of these two new offices makes a total of seventeen factory



**O. D. SHADDOX**

branches throughout the country to serve General Controls' customers. Distributors in principal cities also handle General Controls' broad line of automatic pressure, temperature, level and flow controls.

★ ★ ★

### Fessler Heads Penn Dayton Office

**F. X. FESSLER** has been named manager of the Dayton district office for Penn Electric Switch Co., according to an announcement by R. H. Luscombe, general sales manager. He succeeds E. A. Price, who was made manager of the company's New York district office.

Educated at Columbia University's School of Engineering, Fessler spent several years as a fuel and combustion engineer with the Carter Coal Co. and, before joining Penn, was general manager of the Dayton Heating Supply Co. During the war, he served as Engineering Officer and Instructor with the U. S. Maritime Service where he gained valuable experience in both heating and refrigeration.

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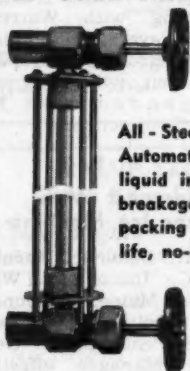
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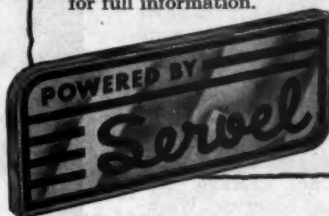
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Fessler has an extensive background of sales engineering and field experience and is well versed in the application of controls for heating, refrigeration, air conditioning, pumps and air compressors as well as safety controls for internal combustion engines.

★ ★ ★

### **Brumbaugh New REMA Secretary**

**W**ERNON Brumbaugh of Chicago, Illinois, has been appointed Executive Secretary of the Refrigeration Equipment Manufacturers Association, effective September 1st, it has been announced by H. F. Hildreth, president of REMA. Mr. Brumbaugh succeeds R. K. Hanson, who has resigned.

Brumbaugh is a veteran in the trade association field, having had 22 years previous experience with national associations representing manufacturers and distributors, including the National Lime Association, Washington, D.C.; The Waxed Paper Institute, Inc., Chicago, Illinois; and American Washer and Ironer Manufacturers' Association, Chicago.

He also served during 1944 and 1945 as the Washington representative of the American Ladder Institute, National Plywood Distributors Association, Non-Ferrous Founders Society, Venetian Blind Association of America, Waxed Paper Institute, Inc., and American Washer and Ironer Manufacturers Association.

Active among trade association, Brumbaugh is a

member and past president of Washington Trade Association Executives, also a member of the American Trade Association Executives, and the Trade Association Executives Forum of Chicago.

Mr. Brumbaugh will be located at the headquarters office of REMA, 1107 Clark Building, Pittsburgh, Pennsylvania, until such time as details may be completed for moving the headquarters to some other city.

★ ★ ★

### **Warren Names Hart Chief Engineer**

**T**HOMAS H. (RED) HART, for many years identified with design and service engineering, has been appointed Chief Refrigeration Engineer of



THOS. H. HART

The Warren Company, Incorporated. A native of St. Louis, Mr. Hart has more recently been associated with Detroit Lubricator Co. as Sales Engineer, and has on numerous occasions worked on assignments in the perfecting of advance designing for Warren.

Mr. Hart is a charter member of the ten-year-old Atlanta Chapter of the RSES and a member of ASRE; he holds Georgia

Engineer's License, issued during the first year Georgia put the law in effect.

Under Mr. Hart's direction, The Warren Company will have one of the best-equipped and staffed engineering laboratories in the industry with the completion of an entirely new engineering building within the next year. Various test rooms equipped with the latest electronic recorders, electronic flow meters, and other advanced apparatus for perfecting commercial-refrigerator units of many classifications will be a part of this expansion program.

The service school at Warren's Atlanta plant, in keeping with Warren's keen eye for thorough training of its field service men, will be greatly expanded under Mr. Hart's direction.

★ ★ ★

### **Pendergast With Baker Ice Machine**

**T**HE Baker Ice Machine Co., Inc. of South Windham, Maine, announces the appointment of Thomas S. Pendergast as General Manager effective October 4, 1948.

Mr. Pendergast will make his headquarters at Baker's General Offices in South Windham. He will direct the company's overall operations including Baker's two manufacturing plants; the original mid-western Baker plant located in Omaha, Nebraska, and the company's new Eastern plant in South Windham.

Mr. Pendergast has a broad background of experience in all phases of the refrigeration indus-

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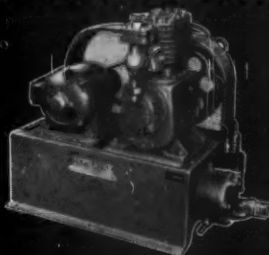
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try, dating back to 1922 when he started work with the Kold King Manufacturing Company. Later, when Kold King was purchased by the General Necessities Corporation of

Early this year, he resigned to join the Hupp Corporation as Sales Manager of the Refrigeration Products Division in Cleveland.

★ ★ ★

## Tweedell Joins Carrier Corp.

**JAMES C. TWEDELL**, long engaged in the international field of air conditioning and refrigeration, has joined the New York headquarters' staff of the International Division of Carrier Corporation, Heman Greenwood, vice president in charge of Carrier's export operations, has announced.

Mr. Tweedell was head of the International Division

of York Corporation from 1935 to July 1, 1948, when he resigned. During the war years from 1942 through 1945 he was also in charge of all York sales as acting general sales manager. He first entered the refrigeration field 24 years ago, when he joined York as an engineer.

Mr. Tweedell is a director and former president of the Export Managers Club of New York and has been active in the promotion of foreign trade as a member of committees established for that purpose by the U. S. Chamber of Commerce, National Association of Manufacturers, and the Commerce and Industry Association of New York.



T. S. PENDERGAST

Detroit, Mr. Pendergast became Chief Engineer of that company.

In 1931, the General Necessities Corporation's Refrigeration Plant was purchased by the Universal Cooler Corporation, and Mr. Pendergast was made Sales Manager of the latter, becoming Vice President and Director of Sales in 1937.

Through his efforts, the plant was filled with war contracts largely for refrigeration equipment. Much of this was gasoline-powered for overseas duty and supplied to the Army Corps of Engineers, Bureau of Docks of the Navy, and the Office of the Quartermaster General.

In 1943, Mr. Pendergast became Vice President and Works Manager, a position he held during the period of high war production.

Universal Cooler Corporation was purchased by the International Detrola Corp. in the Fall of 1946, and Mr. Pendergast was made Director of Sales.

Statement of the ownership, management, circulation, etc., required by the Act of Congress of August 24, 1912, and March 3, 1933, of THE REFRIGERATION SERVICE ENGINEER, published monthly at 455 North Wacker Ave., Chicago 44, Ill., for October, 1948.

State of Illinois, Cook County, ss: Before me a Notary Public in and for the State and county aforesaid, personally appeared H. T. McDermott, who, having been duly sworn according to law, deposes and says that he is the Editor and Publisher of THE REFRIGERATION SERVICE ENGINEER, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, and March 3, 1933, embodied in section 433, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business manager are: Publisher, Nickerson & Collins Company, Chicago, Ill.; Editor, H. T. McDermott, Oak Park, Ill.; Managing Editor, H. D. Busby, River Grove, Ill.; Business Manager, L. R. Townsley, Chicago, Ill.

2. That the owners are: Nickerson & Collins Co., Chicago, Ill.; H. T. McDermott, Oak Park, Ill.; H. T. Curtis, Chicago, Ill.; L. R. Townsley, Chicago, Ill.

3. That the known bondholders, mortgagees and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages or other securities are: There are no bondholders, mortgagees, or other security holders.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, as they appear upon the books of the company but also in cases where the stockholders or security holders appear upon the books of the company as trustees or in any other fiduciary relation, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which the stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

(Signed) H. T. McDERMOTT.

Editor and Publisher.

Sworn to and subscribed before me this 16th day of September, 1948. Helen G. Smith, notary public, (Seal.) (My commission expires June 24, 1952.)



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- 3—Maintain and warehouse a stock of such products to supply adequately the requirements of the trade.
- 4—Distribute to the trade only, a catalog, either of their own or an aggregation of manufacturers' catalogs, compiled in accordance with such rules and regulations as may be prescribed by the Board of Directors.
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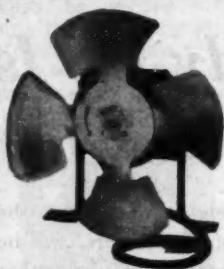


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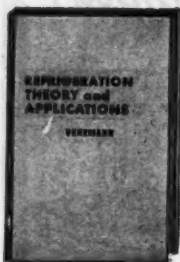
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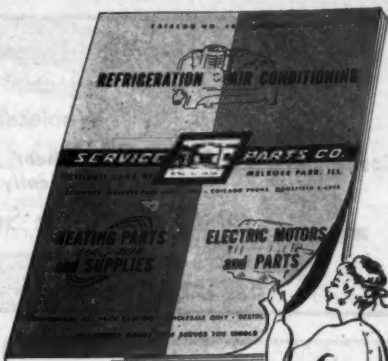
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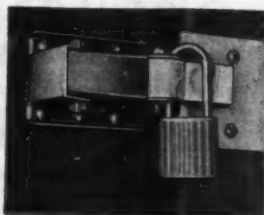
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### IMPORTANT

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